D1600

Digital Recording Studio

Owner's Manual

TouchView
Graphical User Interface

REMS

KORG

Ⓔ ②

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

IMPORTANT SAFETY INSTRUCTIONS

WARNING—When using electric products, basic precautions should always be followed, including the following:

1) Read all the instructions before using the product.
2) Do not use this product near water—for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3) This product should be used only with a cart or stand that is recommended by the manufacturer.
4) This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5) The product should be located so that its location or position does not interfere with its proper ventilation.
6) The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7) The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8) The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
9) Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
10) The product should be serviced by qualified service personnel when:
    a) The power-supply cord or the plug has been damaged; or
    b) Objects have fallen, or liquid has been spilled onto the product; or
    c) The product has been exposed to rain; or
    d) The product does not appear to operate normally or exhibits a marked change in performance; or
    e) The product has been dropped, or the enclosure damaged.
11) Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS

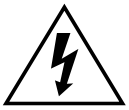
WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

AVERTISSEMENT:
RISQUE DE CHOC ÉLECTRIQUE—NE PAS OUVRIR.

注意 感電の恐れあり、キャビネットをあけるな

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER—Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product—if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

THE FCC REGULATION WARNING (for U.S.A.)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the user’s authority to operate this equipment.

CE mark for European Harmonized Standards

CE mark which is attached to our company’s products of AC mains operated apparatus until December 31, 1996 means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).
And, CE mark which is attached after January 1, 1997 means it conforms to EMC Directive (89/336/EEC), CE mark Directive (93/68/EEC) and Low Voltage Directive (73/23/EEC).
Also, CE mark which is attached to our company’s products of Battery operated apparatus means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

IMPORTANT NOTICE FOR THE UNITED KINGDOM

WARNING—THIS APPARATUS MUST BE EARTHED
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug,proceed as follows:

- the wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚, or coloured green or green and yellow.
- the wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- the wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Handling of the internal hard disk

Do not apply physical shock to this device. In particular, you must never move this device or apply physical shock while the power is turned on. This can cause part or all of the data on disk to be lost, or may damage the hard disk or interior components.

When this device is moved to a location where the temperature is radically different, water droplets may condense on the disk drive. If the device is used in this condition, it may malfunction, so please allow several hours to pass before operating the device.

Do not repeatedly turn the power on/off. This may damage not only the D1600, but also any SCSI devices that are connected.

This device begins to access the hard disk immediately after the power is turned on.

Never turn off the power while the HDD access indicator is lit or blinking. Doing so can cause all or part of the data on disk to be lost, or may cause malfunctions such as hard disk damage.

If the hard disk has been damaged due to incorrect operation, power failure, or accidental interruption of the power supply, a fee may be charged for replacement even if this device is still within its warranty period.

Caution when transporting the D1600

When transporting the D1600, please pack it in the carton and shock-absorbing material in which it was originally packed.
If an internal IDE hard disk (e.g., HDD-20G) or internal CD-R/RW drive (e.g., CDRW-2) is installed, you must remove them from the D1600 and pack them in their own carton for transportation. Please take care that these units are not subjected to physical shock or vibration during transportation.
If the D1600 is transported with the hard disk and/or CD-R/RW drive installed, data may be lost, or the D1600, hard disk, or CD-R/RW drive may malfunction.

Phantom Power
To prevent hazard or damage, ensure that only microphone cables and microphones designed to IEC-268-15A are connected.

COPYRIGHT WARNING

This professional device is intended only for use with works for which you yourself own the copyright, for which you have received permission from the copyright holder to publicly perform, record, broadcast, sell, and duplicate, or in connection with activities which constitute "fair use" under copyright law. If you are not the copyright holder, have not received permission from the copyright holder, or have not engaged in fair use of the works, you may be violating copyright law, and may be liable for damages and penalties. If you are unsure about your rights to a work, please consult a copyright attorney. **KORG TAKES NO RESPONSIBILITY FOR ANY INFRINGEMENT COMMITTED THROUGH USE OF KORG PRODUCTS.**

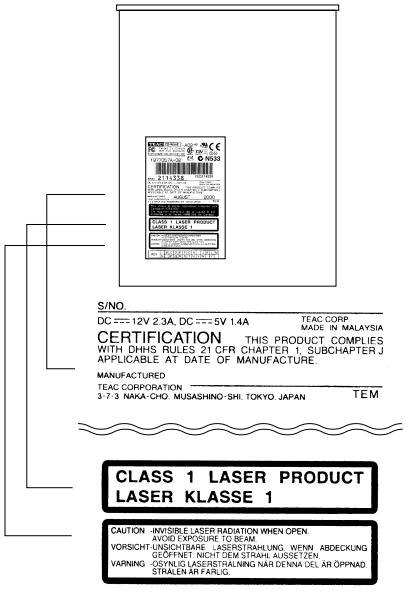
For customers using the CDRW-2 drive

CAUTION FOR LASER

This product has been designed and manufactured according to FDA regulations "title 21. CFR. Chapter J. based on the radiation Control for Health and Safety Act of 1968", and is classified as a class 1 laser product. There is no hazardous invisible laser radiation during operation because invisible laser radiation emitted inside of this product is completely confined in the protective housings.
The label required in this regulation is shown bellow.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Optical pickup
Type: KRS-202A
Manufacturer: SONY CORPORATION
Laser output: Less than 0.1mW(Play) and 32mW(Record) on the objective lens
Wavelength: 777-787nm


S/NO.
DC 12V 2.3A, DC 5V 1.4A
TEAC CORP.
MADE IN MALAYSIA
CERTIFICATION
THIS PRODUCT COMPLIES WITH DHHS RULES 21 CFR CHAPTER 1, SUBCHAPTER J APPLICABLE AT DATE OF MANUFACTURE.
MANUFACTURED
TEAC CORPORATION
3-7-3 NAKA-CHO, MUSASHINO-SHI, TOKYO, JAPAN
TEM
CLASS 1 LASER PRODUCT
LASER KLASSE 1
CAUTION -INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
VORSICHT-UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
VARNING -OSYNLIG LASERSTRALNING NÄR DENNA DEL ÄR ÖPPNAD. STRALEN ÄR FARLIG.

* Appearance and specifications of this product are subject to change without notice.
• Company names, product names, and names of formats etc. are the trademarks or registered trademarks of their respective owners.

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Introduction

Thank you for purchasing the Korg **D1600** *Digital Recording Studio*.

To ensure trouble-free enjoyment, please read this manual carefully and use the instrument as directed.

Features

- The D1600 is a 16 track digital multi-track recorder (MTR) with full-digital processing (**24 bit** internal processing, **16/24 bit** uncompressed recording and playback, **44.1 kHz** sampling frequency).
  From recording to effect processing to mixing down to CD-R/RW (a CD-R/RW drive is required), **all processing is performed completely in the digital domain**.
- It contains a **16 track** recorder, a **24-channel 8-bus** mixer, and effects.
  When using 16 bit recording/playback: 8 tracks can be recorded simultaneously, and 16 tracks can be played back simultaneously.
  When using 24 bit recording/playback: 4 tracks can be recorded simultaneously, and 8 tracks can be played back simultaneously.
- User-installable internal hard disk.
  You can install either a separately sold Korg HDD-20G hard disk drive or any Korg-recommended **3.5 inch IDE hard disk drive**. An internal hard disk allows approximately **3.1 hours** of recording for each gigabyte (16 bit, 1 track). If the HDD-20G hard disk drive (sold separately) is installed, approximately 62 hours of recording is possible.
  A maximum of 100 songs × 16 tracks × 8 virtual tracks can be recorded, for a total maximum of 12,800 tracks of data.
- User-installable internal CD-R/RW drive. You can install either a separately sold Korg CDRW-2 CD-R/RW drive or any Korg-recommended **5 inch ATAPI internal CD-R/RW drive**. If a CD-R/RW drive is installed, you will be able to create original CD's and back up song data, and record audio data from a CD without connecting any other equipment to the D1600.
- All analog inputs in the mixer section use **high-performance balanced preamps** to take full advantage of the audio quality of full-digital processing.
  XLR inputs with +48V phantom power and a dedicated **guitar input** are provided. A wide variety of audio sources can be connected directly, from mic level to +16 dBu (higher than professional level).
  All phone jack inputs use **TRS balanced jacks** to support **balanced** input. Of course, unbalanced input is also supported.
  The **S/PDIF digital input** provides a sampling rate converter that automatically converts 48 kHz or 32 kHz sources to **44.1 kHz**.
- Each analog input/mixer channel provides **high EQ**, **mid EQ**, and **low EQ**. The mid EQ has an adjustable cutoff frequency.
  EQ is provided separately for input and mixer channels, preventing the problem that can occur on MTR units with an analog mixer when recording EQ settings are applied again to the playback.
- The built-in effects use Korg's " REMS " modeling technology, putting detailed and powerful effect models at your fingertips.
- Up to **eight insert effects** are available for insertion into analog input/mixer channels; signals from each channel can be sent to the **two master effects**, and an **independent final effect** can be applied to the master output.
  For the insert effects, master effects, and final effects you can choose from 98 different types of high quality effect, and use up to five effects simultaneously. The D1600 provides 128 insert effect presets, 32 master effect presets, and 32 final effect presets created by professional musicians and studio engineers, for a **total of 192 preset effect programs**. Based on these preset programs, you can edit your own settings and save them in one of the 192 user effect locations. An expression pedal (separately sold option) can be connected to control an insert effect in realtime.
- The built-in **tuner** lets you tune a connected guitar or check the tuning of a playback track.
- The fader, EQ, pan, and effect settings of the mixer section can be saved in a scene, and **100 scenes** can be registered for each song. You can cause scenes to change automatically as playback progresses, or recall them as general-purpose settings when needed.
- Operations such as recorded, copy, and delete are performed as **non-destructive editing**. You can use the **Undo** function to reverse any record or edit operations previously executed. Then use the **Redo** function to cancel the "undo." Undo allows up to 99 prior recording or editing operations to be undone.
- Songs or phrases that you create by recording or editing will be saved to disk automatically by the **Auto Save function** when you switch songs, eliminating the need to save the data manually.
- Each track provides **eight virtual tracks**.
  For example, you might record different takes of a solo part on different virtual tracks, and then choose the best performance later. When using bounce (ping-pong) recording, currently-unused virtual tracks can be specified as the bounce destination, allowing you to combine multiple tracks of data into two tracks without erasing any of the 16 tracks. By repeating this "16 to 2 track bounce" operation, you can theoretically create a song of 16 x 8 tracks = 128 tracks without erasing any of the original track data.
- In addition to a conventional metronome sound, **215 rhythm patterns** in a variety of musical styles are built-in, allowing you to hear a more musically interesting rhythmic guide as you record. You can select a favorite rhythm and start recording right away,

without having to connect and set up a drum machine. These rhythm patterns can also be recorded on a track.

- **Auto** and **manual punch-in/out recording** make it easy to re-record the desired portion of a performance.
- The **Trigger Recording function** allows recording to start automatically in response to an audio input, so that it's easy to begin recording even when both hands are occupied playing an instrument. You can also use a foot switch to start or stop recording.
- The **Scrub function** lets you listen to the recorded sound of a track just as if you were manually moving the reels of an open-reel tape recorder – a great convenience when you need to find the exact beginning of a phrase.
- The **Locate Point Memory function** (four points for each song) and **Mark Memory function** (100 points for each song) allow you to register locations within a song, making it easy to mark and jump instantly to transitional points within the song. Names can also be assigned to marks.
- The **Program Play function** lets you play back multiple songs in the order you specify. These songs can then be recorded to MD or DAT to create your own album.
- When recording and editing songs or phrases from a record or CD, you can use **tap input** to input a tempo that follows the song. Alternatively, you can create **tempo maps**, or record MIDI clock messages from an external device.
- The D1600 can **synchronize** with MIDI Clock, MTC, or MMC-compatible sequencers or rhythm machines.
- Standard connectors such as **SCSI** and **S/P DIF** (digital interface) are provided, allowing connection to numerous external devices. The SCSI connector allows external hard disks, CD-R/RW, or removable disks to be used to record/play or backup data.
  The S/P DIF connectors allow you to record digital audio from an external digital device such as DAT or MD, and to directly output the mixdown of a song you created for recording on an external DAT or MD.
  AUX OUT jacks allow external effect devices to be connected.
- **WAV files can be imported/exported**, making it easy for audio data to be exchanged with your computer.
- Mixer parameters can be controlled via MIDI. An external MIDI sequencer can be used to implement **mixer automation**.
- Data backed up by the D8, D12 and D16 digital recording studio units can be restored into the D1600, allowing easy transfer of data. Playable D12, D16 drives can also be played back by the D1600.

What is *RADIAS* ?

RADIAS (Resonant structure and Electronic circuit Modeling System) is KORG's proprietary sound modeling technology which precisely reproduces the complex character and nature of both acoustic and electric instruments as well as electronic circuits in real world environments. *RADIAS* emulates a wide variety of sound generation characteristics including instrument bodies, speakers & cabinets, acoustic fields, microphones, vacuum tubes, transistors, etc.

Printing conventions in this manual

Switches and knobs [ ]
Keys, **dials**, and **knobs** on the panel of the D1600 are printed within [square brackets].

Parameters that appear in the LCD screen " "
Parameters that appear in the LCD screen are printed inside "double quotation marks." The terms '**button**' and '**cell**' refer to objects in the LCD screen.

note The LCD screen of the D1600 is a touch panel. To select a parameter, simply touch that parameter directly. Alternatively, you can use the [CURSOR] key to move the cursor to the desired parameter. Most of the procedure examples given in this manual will use the method of directly pressing the parameter in the LCD screen to select it (→p.14).

Bold-face type
Panel settings such as for faders or the [TRACK STATUS] keys are printed in **bold type**, and parameter values are printed in "**bold type**."

Bold type also indicates content within the text that we wish to emphasize.

Steps ① ② ③ …
Steps in a procedure are indicated as ① ② ③ …

p.■■
This indicates a page or parameter number for reference.

Symbols ⚠, note
These symbols respectively indicate points of caution and notes of advice.

[...] "xx" tab page
This indicates a page displayed in the LCD screen. To access this page, press the [...] key on the panel.
If there is more than one tab, the tab pages will be selected successively each time you press the [...] key.

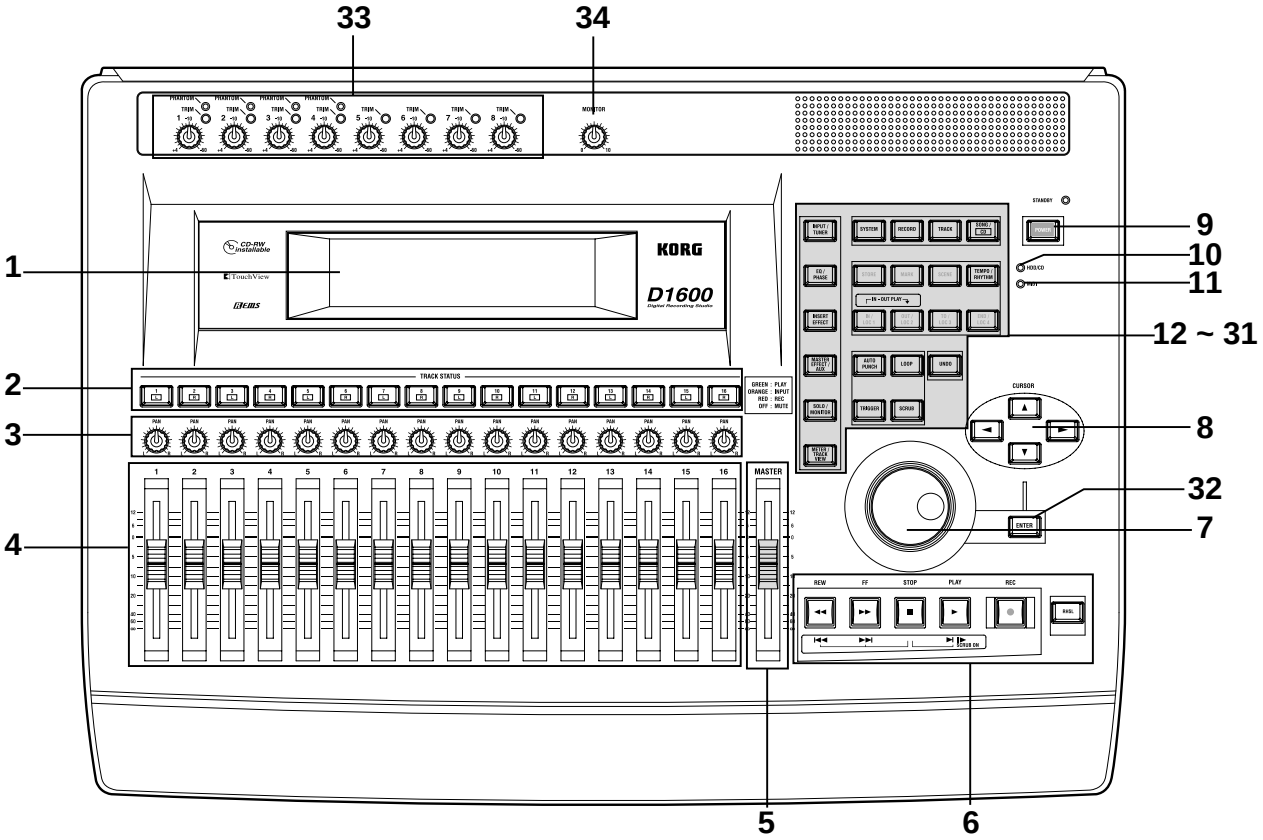
note Example: The currently selected tab page.
The illustration below shows the [MASTER EFFECT/AUX] "MstEff1" tab page. To select this tab page, press the top panel [MASTER EFFECT/AUX] key.
The various objects in the tab page are parameters etc. There are also underlines, popup buttons, and icons.
In the figure shown, "EffectNumber," "RetLev" and "Rename" buttons etc. are parameters. Currently, "EffectNumber" is highlighted, and can be edited. The current value is "**M001**," and this will change if you rotate the [VALUE] dial. (→p.14)

When you press the [MASTER EFFECT/AUX] key once again, the [MASTER EFFECT/AUX] "MstEff2" tab page will appear.

LCD screens
The parameter values shown in the LCD screens printed in this manual are explanatory examples, and may not necessarily match the displays that appear on your D1600.

Panel overview of the D1600

Top panel



1 LCD screen
The D1600 uses a TouchView system based on a touch panel screen. By pressing objects that are shown in the LCD screen, you can select pages, tabs, and parameters, and set their values.
Also displayed are the volume (level meters) time locations (locate) during recording or playback, and various other parameters. (→p.13)

2 [TRACK STATUS] keys
These keys are used to put each track into playback, record, or to mute (silence) status. Each time you press a key, the track setting will alternate. (→p.111)
Green: PLAY
Orange: INPUT
Red: REC
Dark: MUTE
When recording from analog/digital input, you can arm up to eight recording tracks.
note These settings can be paired.

3 [PAN] knobs (Ch1…16)
These knobs adjust the stereo location of each channel. (→p.111)
note These settings can be paired, and registered in a scene.

4 [CHANNEL] faders (Ch1…16)
These faders adjust the recording/playback volume of each channel. (→p.112)
note These settings can be paired, and registered in a scene.

5 [MASTER] fader
This adjusts the volume of all channels. During bounce recording, this sets the recording level of the bounce destination track. (→p.112)

6 TRANSPORT keys
[REC] key, [RHSL] key, [PLAY] key, [STOP] key, [REW] key, [FF] key
These are used to perform recording operations such as playback and record. (→p.112)

7 [VALUE] dial
This is used to modify parameter values, and to move the current time.
When the Scrub function is on, rotating the dial will cause the track to play at the corresponding speed.

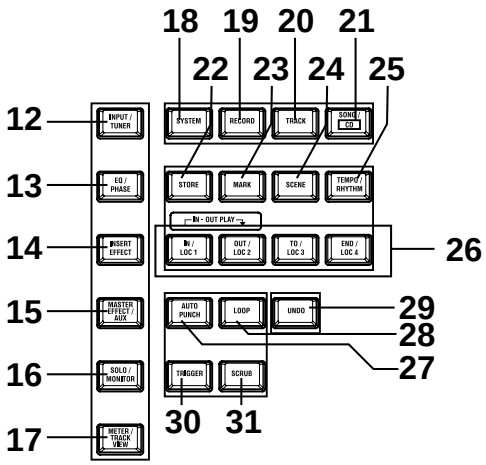
8 [CURSOR] key
This key moves the cursor.

9 [POWER] key
This turns the power of the D1600 on/off. When the D1600 is in standby mode, pressing the [POWER] key will turn on the power. If the D1600 is operating, pressing and holding the [POWER] key for a while and then shutting down will cause it to enter standby mode. (→p.17)

10 HDD/CD access indicator
This indicator will light when the internal hard disk is being accessed for recording or playback, or when the internal CD-R/RW drive is operating.

Never move the D1600 or apply physical shock to it when this HDD/CD access indicator is lit.

11 MIDI indicator
This indicator will light when MIDI messages are received from the MIDI IN connector.



12 [INPUT/TUNER] key
This key is used to select the mixer channel to which the audio signal from each input jack will be sent. (→p.23)
This is also used when adjusting the EQ (for recording) that is applied to the analog inputs. (→p.102)
In addition, this key is used to access the tuner. (→p.103)

13 [EQ/PHASE] key
This key is used to specify the EQ (for track playback) and phase of each channel. (→p.37, 104)

note These settings can be paired, and registered in a scene.

14 [INSERT EFFECT] key
This key is used to select the location of an insert effect, to select the effect type, and to select and edit effect programs. (→p.43, 105)

note These settings can be registered in a scene.

15 [MASTER EFFECT/AUX] key
This key is used to select and edit effect programs for master effects 1 and 2, and to set the send levels from each channel to the master effects. In addition, it is used to set the send amount to an external effect, and to select and edit effect programs for the final effects. (→p.45, 107)

note These settings can be registered in a scene. The send settings can be paired.

16 [SOLO/MONITOR] key
This key is used to solo an individual channel, send, or return. It is also used to select an audio source for monitoring. (→p.109)
When solo is on, the LED will blink.

17 [METER/TRACK VIEW] key
This key is used to display volume data (level meters) during recording and playback, and to view audio event data in each track (track view). (→p.111)

18 [SYSTEM] key
This key is used to make foot switch and MIDI-related settings, to manage data on disk, and to backup or restore data. (→p.75)

19 [RECORD] key
Press this key to make recorder settings such as selecting the recording source or the bounce recording method etc. (→p.80)

20 [TRACK] key
This key is used to select the virtual track for each track, to perform track editing operations such as copy or delete, and when importing or exporting WAV files. (→p.81)

21 [SONG/CD] key
Press this key to create a new song, rename/select a song, perform a song editing operation such as copy or move, perform program playback of songs, or produce an audio CD (a CD-R/RW drive is required). (→p.88)

22 [STORE] key
Press this key to register the time location for a locate point, a mark, or a scene. (→p.35, 92)

23 [MARK] key
Register the desired time location in a song as a **Mark**, so that the registered time can be recalled instantly.
It is also used to edit marks by renaming or deleting them etc. (→p.36, 92)

24 [SCENE] key
This key is used to register [CHANNEL] fader, [PAN] knob, EQ or effect send settings as a **scene** at the specified time location in a song. If the Scene Read setting is on during playback, the registered scenes will be selected automatically at the corresponding times. Scenes can also be sorted, renamed, or deleted. (→p.39, 92)
This key will light when Scene Read is "On."

25 [TEMPO/RHYTHM] key
This key is used to set the tempo for a song, create a tempo map, and turn the rhythm function on/off. (→p.61, 95)
This key will light when the Rhythm function is on.

26 [IN/LOC1] key, [OUT/LOC2] key, [TO/LOC3] key, [END/LOC4] key
These keys are used to register a desired time location within a song, or to instantly jump to a registered time location.
The time locations registered here are used as the punch-in/out locations, and the editing range for track editing operations such as copy or delete.

(→p.35, 97)
By holding down the [IN/LOC1] key and pressing the [OUT/LOC2] key, you can listen to the audio between the IN–OUT points.

27 [AUTO PUNCH] key
This key is used to turn the Auto Punch-in/out function on/off, to set the pre/post roll time, and to verify the start/end locations. (→p.28, 98)
This key will light when the Auto Punch-in/out function is on.

28 [LOOP] key
This key is used to turn the Loop function on/off for playback or recording, and to verify the start/end locations. (→p.99)
This key will light when the Loop function is on.

29 [UNDO] key
After recording or editing a track, you can use the **Undo function** to return the data to its prior state, and then (if desired) use the **Redo function** to cancel the Undo and go back to the edited data.
Up to 99 prior recording or editing operations can be undone. You can select from 1, 8, or 99 levels of undo. (→p.99)
This key will light when Undo or Redo is available.

30 [TRIGGER] key
This is the on/off key for the **Trigger Recording** function, which causes recording to begin automatically in response to an audio input. This key is also used to set the threshold level and pre-trigger time. (→p.31, 100)
This key will light when the Trigger Recording function is on.

31 [SCRUB] key
This key turns the **Scrub**, **Play To/From**, and **Slow Play functions** on/off. The key will light when the Scrub function is "On." These functions are used by controlling the [VALUE] dial or TRANSPORT keys. (→p.101)

32 [ENTER] key
This key is used to finalize a parameter selection, or to turn a parameter on/off.

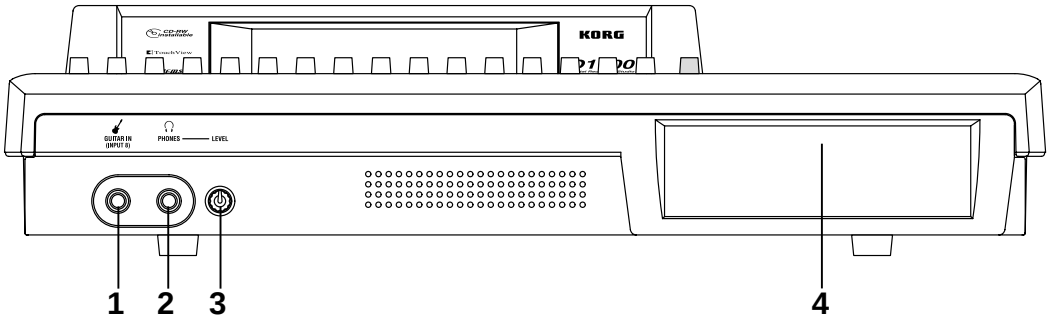
33 [TRIM] knob: –60...–10...+4 dBu
These knobs adjust the input level. The markings indicate the input level.
The LEDs will show different colors to indicate the following statuses.
- Lit green: input present
- Lit orange: correct level
- Lit red: excessive level

Adjust each [TRIM] knobs appropriately, so that the LEDs do not turn red when the connected instrument is played at maximum volume.
The input level will depend on the instrument or performance, but the approximate ranges are as follows.
–60 – **–40** dBu: mic input
–30 dBu: guitar, bass guitar
–10 dBu: consumer audio devices such as a CD player
+4 dBu: keyboards or studio equipment

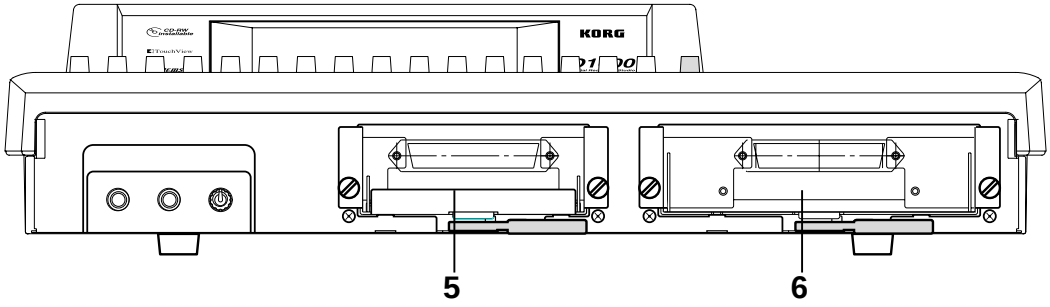
If the [TRIM] knob is raised when nothing is connected to an input, hum or noise may result.

34 [MONITOR OUT LEVEL] knob
This knob sets the volume level from the [MONITOR OUT L/R] jacks.

Front panel



When the front cover is removed



Front panel

1 [GUITAR IN] jack
A guitar or bass guitar can be plugged in here. This is an unbalanced 1/4" (6.3 mm) input jack with 1 M-ohm impedance.

2 [PHONES] jack
A set of headphones can be connected here. This is a 1/4" stereo phone jack. This outputs the same signal as the [MONITOR OUT L/R] jacks.

3 [PHONES LEVEL] knob: 0...10
This knob sets the volume level of the headphones. The volume will increase in correspondence to the printed grid.

4 CD-R/RW drive bay
This bay allows installation of a CD-R/RW drive recommended by Korg, such as the CDRW-2 CD-R/RW drive option (sold separately). (→p.134)

5 Hard disk cartridge
This cartridge allows installation of a 3.5 inch hard disk recommended by Korg, such as the HDD-20G hard disk drive option (sold separately). (→p.134)

The D1600 will not function without an internal hard disk installed.

6 CD drive cartridge
This cartridge allows connection of a CD-R/RW drive recommended by Korg (such as the CDRW-2 CD-R/RW drive option (sold separately). (→p.134)

Rear panel

1 [AC] connector
Connect the included power supply cable here.

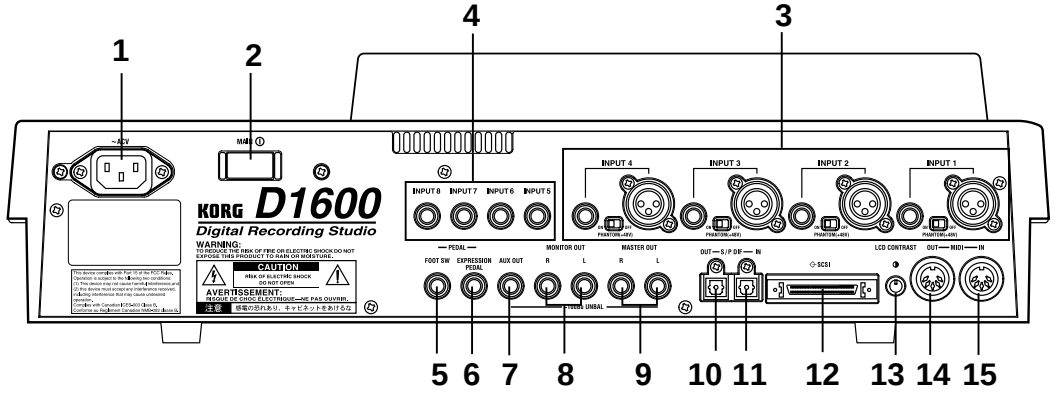
2 [Main power] switch
This turns the main power on/off. When the **[Main power] switch** is turned on, the D1600 will be in standby mode. In standby mode, you can press the [POWER] key to turn on the power of the D1600. While the D1600 is operating, you can use the [POWER] key to shut down, and then turn the main power off to turn the power off completely.

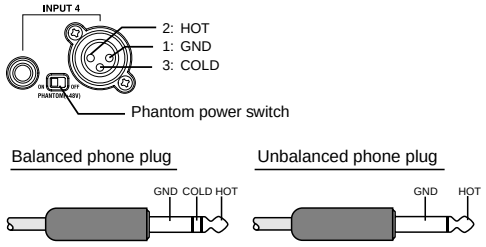
To turn off the power, you must **first press the [POWER] key to perform the shutdown operation**. Never turn off the [Main power] switch or disconnect the power cable until shutdown has been completed.
If you turn off the [Main power] switch or disconnect the power cable before shutdown has been completed, data and user settings may be lost, or the hard disk may be damaged.

3 [INPUT 1], [INPUT 2], [INPUT 3], [INPUT 4] jacks
Audio sources such as mic or line (keyboard etc.) can be connected here.
These are combo-type balanced inputs that combine XLR jacks and 1/4" TRS phone jacks. Unbalanced phone plugs can also be connected. +48V phantom power is provided on the XLR jacks so that you can use condenser mics.

note Only one of the input jacks (XLR or 1/4") can be used at a time.

Rear panel





Phantom power switch: [INPUT 1–4] jacks provide **+48V phantom power** so that condenser mics can be used. Phantom power is supplied to the balanced XLR jacks, and can be switched independently for each channel. Turn this switch on only for channels that use a condenser mic.

If a condenser mic is connected or disconnected with the phantom power switch on, damage to your equipment may occur. For this reason, always turn the phantom power switch off before connecting a condenser mic.

Never connect an unbalanced mic or device when the phantom power switch is on. Doing so may damage your equipment.

4 [INPUT 5], [INPUT 6], [INPUT 7], [INPUT 8] jacks

Mic/line (e.g., keyboard) sources can be input here. These are balanced 1/4" TRS phone jacks. Unbalanced phone jacks can also be connected.

If you connect a plug to the [GUITAR IN] jack, no input signal will be received from the [INPUT 8] jack. If you wish to use the [INPUT 8] jack, disconnect the plug from the [GUITAR IN] jack.

5 [FOOT SW] jack

When your hands are occupied with playing an instrument, you can use a foot switch to control basic operations of the D1600 recorder.
A foot switch can be used to start/stop the playback, start/end manual punch-in recording, register a mark, or to record tap tempo. (→p.75)
Connect the foot switch (optional PS-1) to this jack.

6 [EXPRESSION PEDAL] jack

You can use a pedal to control a specified parameter of an insert effect. You can control the parameter in realtime while you play or record. (→p.47)
Connect an expression pedal (separately sold option, EXP-2, XVP-10 etc.) to this jack.

7 [AUX OUT] jack

Connect this to the input jack of an external effect device.
This jack outputs the external send signal from each mixer channel. (→p.47)
This is a 1/4" phone jack.

8 [MONITOR OUT L/R] jacks

Connect your external monitor system to these jacks. The bus that is sent to the monitor output is selected in the [SOLO/MONITOR] "Monitor" tab page. (→p.109) These jacks output the same audio signal as [PHONES].
This is a 1/4" phone jack.

9 [MASTER OUT L/R] jacks

These are analog outputs for the master LR bus which combines the signals from each mixer channel, or for the audio source that is selected by the Solo function. The Solo selection is made in the [SOLO/MONITOR] "Solo" tab page.
Connect your external monitor system or recording device to these jacks. They output the same audio signal as the [S/P DIF OUT] jacks.
This is a 1/4" phone jack.

10 [S/P DIF OUT] jack

This is an optical-type S/PDIF format (IEC60958, EIAJ CP-1201) digital output jack (stereo).
Use an optical cable to connect this jack to the optical digital input of your DAT or MD.
This jack digitally outputs the same audio signal as the [MASTER OUT L/R] jacks at a sampling rate of 44.1 kHz.

11 [S/P DIF IN] jack

This is an optical-type S/PDIF format (IEC60958, EIAJ CP-1201) digital input jack (stereo).
Use an optical cable to connect this jack to the optical digital output of your DAT or MD.
A sampling rate converter is built in. If the connected source has a sampling rate of 48 kHz or 32 kHz source, it will be converted automatically to 44.1 kHz.

12 [SCSI] connector

An external hard disk drive, or removable disk drive can be connected here, and used for recording/playback in the same way as the internal drive. An external drive can also be used for backup. (→p.67)
In addition, a CD-R/RW drive can be connected here to create an audio CD or to make backups. (→p.49, 67)
This is a HD SCSI-2 (50 pin SCSI) connector.

For details on the SCSI devices that can be used with the D1600, please contact your Korg distributor

13 [LCD CONTRAST] knob

This adjusts the contrast of the LCD screen.
The optimal setting will depend on the viewing angle, so adjust the contrast as necessary. Looking from the front panel, turning the knob toward the right will darken the text, and turning it toward the left will lighten the text.

14 [MIDI OUT] connector

MIDI messages are transmitted from this connector. Use this when you wish to control a connected external MIDI device from the D1600. (→p.73)

15 [MIDI IN] connector

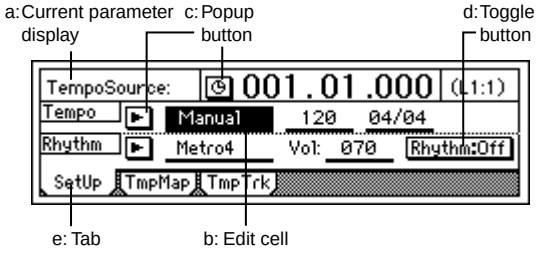
MIDI messages are received at this connector. Use this when you wish to control the D1600 from a connected external MIDI device. (→p.73)

Objects in the LCD screen and their functions

Objects in the LCD screen

The LCD screen of the D1600 features the Touch View system, which uses a touch panel.
By pressing objects displayed in LCD screen you can perform operations such as selecting pages, setting parameter values, moving the cursor location, or editing settings.

note In this manual, terms enclosed in "quotation marks" such as "...", "..." button, or "..." tab refer to objects in the LCD screen which you can operate. Terms enclosed in square brackets such as [...] key, [...] knob, [...] dial, or [...] fader refer to controls etc. located on the top panel, front panel, or rear panel.



a: Current parameter display

This is the name of the parameter currently selected by the edit cell.
For icon-type parameters such as EQ or fader, the value is displayed at the right.

b: Edit cell

When you select a parameter in the LCD screen, the parameter value will be highlighted in some cases. This area is referred to as the **edit cell**, and your editing will apply to the highlighted portion.

The parameter value in the edit cell can be modified using the [VALUE] dial (→p.8) or by using the popup buttons in the LCD screen.

c: Popup button

When you press this button, a **dialog box (f)** will appear.
To enter a parameter value, choose the desired value from the dialog box.

▶, Rename, New

d: Toggle button

Pressing this type of button will alternately switch a function between on/off.

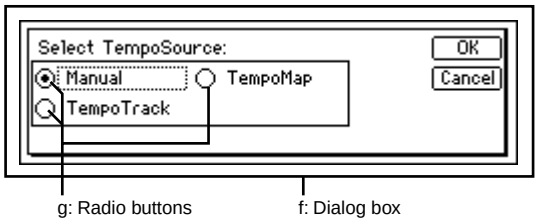
Rhythm:On (on)/ Rhythm:Off (off)

e: Tab page

Each mode contains numerous parameters, which are organized into pages. Each page is accessed by its own **tab**.

f: Dialog box

To execute, press the "OK" button. To cancel, press the "Cancel" button. The dialog box will close.

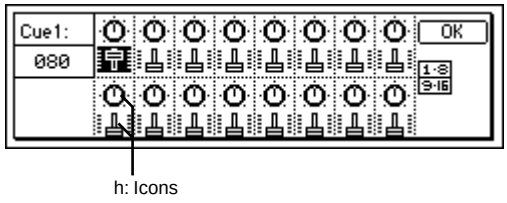


g: Radio buttons

These buttons are used to select one of multiple items. Press one of the radio buttons.

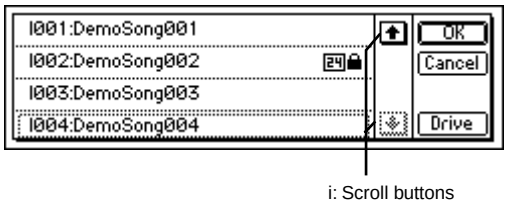
h: Icons

These are objects shaped like faders or knobs. To modify a value, select it and rotate the [VALUE] dial.



i: Scroll buttons

These buttons are used to view parameter values that cannot be displayed in a single screen.



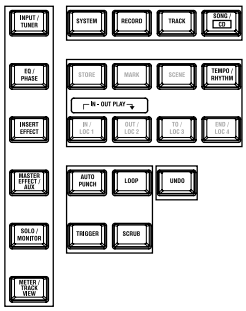
Adjusting the LCD screen contrast

Use the rear panel [LCD CONTRAST] knob to adjust the contrast. (→p.12)

Basic operation

1. Selecting a mode

To make settings in the LCD screen for the various functions of the D1600, you must first press the key of the mode that includes that function.



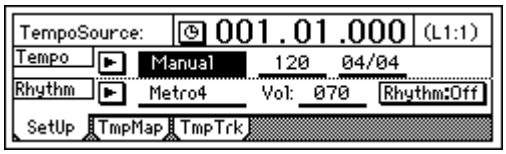
For the functions of each mode, refer to "Reference" (→p.75–).

2. Selecting a tab page

Each mode contains numerous parameters, and these are organized into pages. Pages are accessed by **tabs**.

① **Press the key for the desired mode.**
The illustration below shows a **tab page** of TEMPO/RHYTHM mode that will appear when you press the [TEMPO/RHYTHM] key.

note In this manual, this is referred to as the [TEMPO/RHYTHM] "SetUp" tab page.



② **Select the desired tab page.**
Each time you press the key of the currently selected mode, you will cycle through the tab pages of that mode.
Some pages contain only one tab.

3. Selecting and setting a parameter

Selecting a parameter

Use one of the following methods to select the parameter that you wish to edit.

- In the LCD screen, press that parameter directly.
- Press the up/down/left/right areas of the [CURSOR] key to move the cursor to that parameter.
- In a list display screen, rotate the [VALUE] dial to move the cursor.

Setting a parameter value

The method of setting a parameter value will differ depending on the type of parameter.

○ **Underlined "___" parameters, and icons such as EQ**
Either directly press the parameter displayed in the LCD, or use the [CURSOR] key to move the edit cell so that the parameter is highlighted, and rotate the [VALUE] dial to edit the value.
This is the typical method, and also applies for underlined parameters such as "Tempo", parameters displayed as an icon such as EQ, and changes in locate times.

○ **Popup buttons and dialog boxes**
Use the popup button to access the dialog box, and set the parameter value (→p.13).
- When you press a popup button shown in the LCD screen, a dialog box will appear.
- Use the [CURSOR] key to move the edit cell to the popup button, and press the [ENTER] key to access the dialog box.

○ **Toggle buttons**
These buttons are used to turn a function on/off. (→p.13)
- Each time you press a toggle button shown in the LCD screen, the setting will alternate on/off.
- Use the [CURSOR] key to select the parameter, and press the [ENTER] key. The button will turn on/off each time you press it.

○ **Radio buttons**
These buttons are used to select one of multiple choices.
- When you press one of the radio buttons shown in the LCD, it will be selected.
- Use the [CURSOR] key to move the edit cell to the desired button, and press the [ENTER] key.

○ **Selecting an item from a list**
- To select a song or mark, rotate the [VALUE] dial to select the desired item.
- To select a song in a program play list, use the following procedure.
  ① Select the playback list num.
  ② Rotate the [VALUE] dial to select the song.

Basic operation

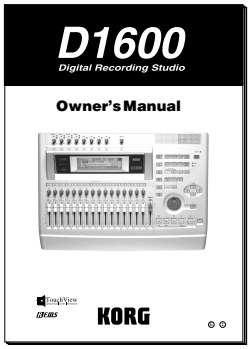
Step 0. Starting

1. Preparations

Included items

Make sure that the following included items are all present.

- **Operating manual (this document)**



- **Demo CD**

- **Power cable**

Before using the D1600 for the first time

The D1600 will not operate unless an internal hard disk is installed.
Before using the D1600 for the first time, you must install an internal hard disk.
You must install either a separately sold Korg **HDD-20G** hard disk or a Korg-recommended product.
Refer to p.134 "About the internal hard disk."

note For a list of hard disks recommended by Korg, please contact your Korg distributor.

2. Using the D1600

The D1600 lets you record your own performance and shape it into a completed song.
If a CD-R/RW drive such as the CDRW-2 is installed in the D1600, you will also be able to easily create your own original CD's.

Connecting instruments and turning on the power

Connect the instrument and mic etc. that you wish to use for recording to the D1600, and turn on the power. (→p.17)

Create a song

First you will create a song, and assign a song title.
If you will be creating a CD, set the song type to 16 bit.
The title can be assigned later. (→p.21)

Recording

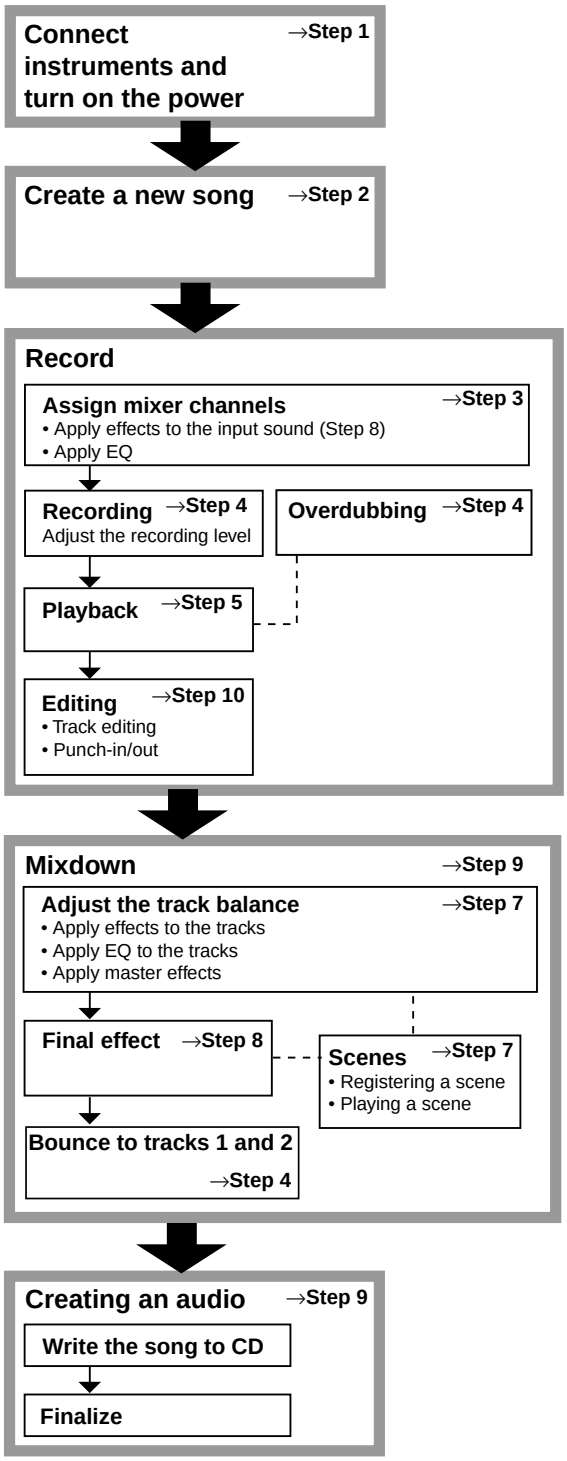
Successively record the melody, bass, and drums etc. on tracks 1–16.
This process is the same as when using analog tape multi-track recorders, but the important difference is that on the D1600, you can use numerous convenient functions, such as the **Undo function** to cancel a mistake you made, the **Auto Punch-in/out function** to re-record a specific area that you wish to fix, or **Trigger Recording** to automatically start recording as soon as you begin playing your instrument. You can also take advantage of the D1600's virtual tracks to record and edit using more than 16 tracks. In addition, you can use the internal rhythm sounds as a tempo guide, or apply the internal effects as you record. (→p.27)

Mixdown

In this step, you can apply EQ and effects to the sound of each recorded track, adjust the volume and pan, and combine the tracks into two tracks. (→p.49)
By applying the built-in Final Effect to the MASTER L/R, you can add finishing touches to your song. When you have finished adjusting the balance, use "16Tr → 2Tr bounce" to mix the song down to two tracks.
At this time if you record the mixdown on virtual tracks other than the current virtual tracks (i.e., the tracks selected for recording and playback), you will be able to record and compare between up to seven different mixdowns. (→p.30)

Writing your song to CD

In this step, the song that was mixed down to tracks 1 and 2 is turned into a CD.
Play back the mixed down tracks 1 and 2 to check them. These tracks (1 and 2) will be written to the CD. Then simply insert a new CD-R disc into the drive, and press the "WriteToCD" button to write the data to CD.
By using the same procedure to create additional songs and writing them to CD, you can create a CD album. When you are finished, press the "Final" button to finalize the disc and complete your very own original CD. (→p.49)



Step 1. Making connections, and turning the power on/off

1. Connections

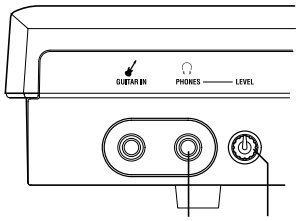
The diagram below shows a basic example of connections when using the D1600 to record. Make the appropriate connections for your system, substituting your own equipment as necessary for the equipment shown here.

note For details on installing the **HDD-20G** hard disk drive option or the **CDRW-2** CD-R/RW drive option, refer to p.134.

Be sure that the power is turned off while you are making connections. If the power is on while connections are being made, your speaker system may be damaged, or other malfunctions may occur.

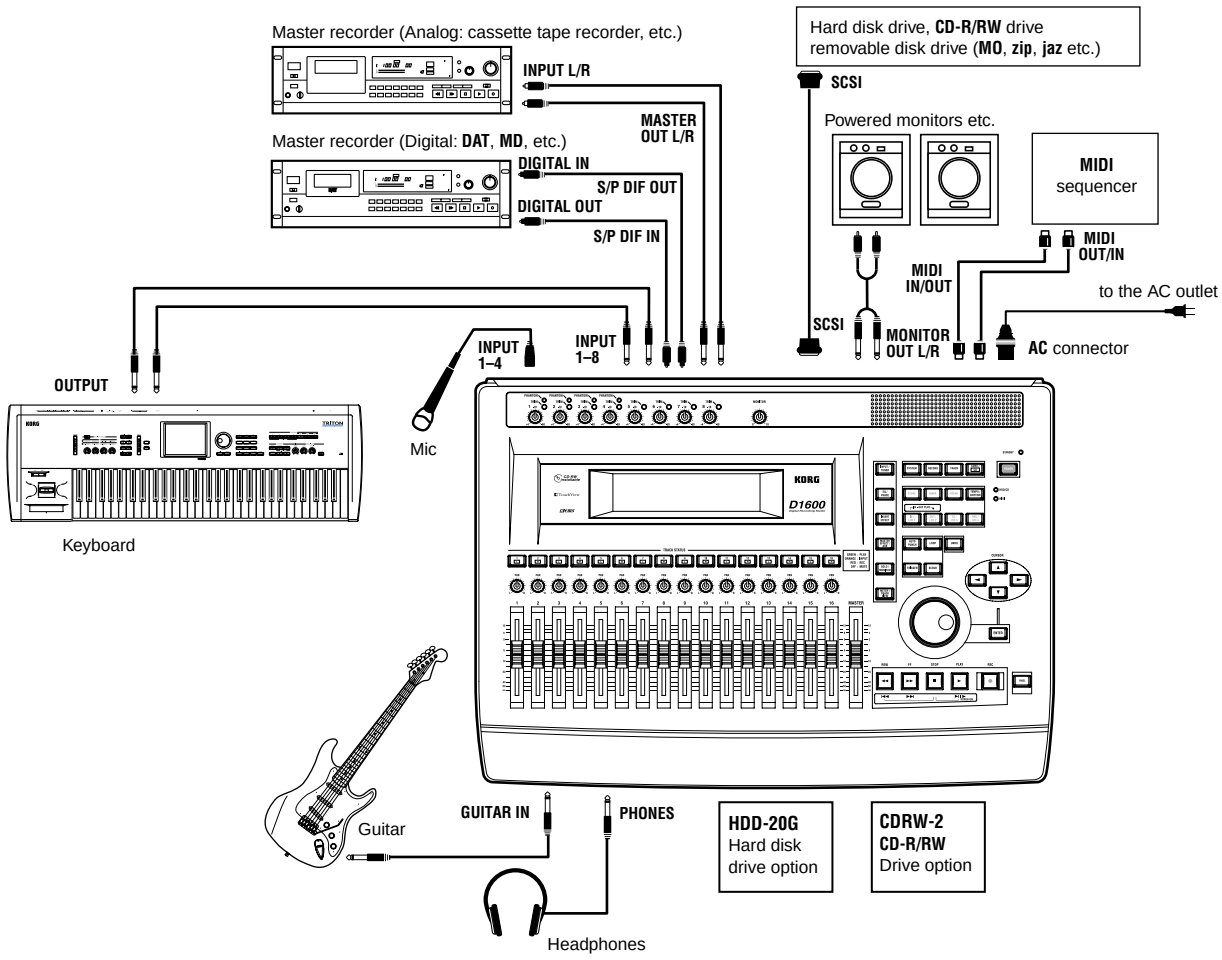
① **Connect the included power supply cable.**
Connect the power supply cable to the D1600's [AC] connector. Then plug the other end into an electrical outlet.

② **Connect your audio monitoring system.**
Use a phone cable to connect powered monitors etc. to the [MONITOR OUT L/R] jacks.
If you will be monitoring through headphones, connect the 1/4" phone plug of your headphones to the [PHONES] jack.
Use the [PHONES LEVEL] knob to adjust the volume.



[PHONES] jack [PHONES LEVEL] knob

note The audio signal that is output from the [MONITOR OUT L/R] jacks and the [PHONES] jack is set in the [SOLO/MONITOR] "Monitor" tab page. (→p.109)



③ **Connect your input devices.**

Connections for recording analog sources

- Guitar, bass guitar ↔ [GUITAR IN] jack
- Mic (XLR) ↔ [INPUT 1]–[INPUT 4] jacks
- Synthesizer etc. ↔ [INPUT 1]–[INPUT 8] jacks

For details on assigning the audio inputs to mixer channels and auditioning the input sound, refer to p.23.

note A guitar or bass guitar that is being sent through a compact effect device can be connected to [INPUT 1]–[INPUT 8].

note When inputting in stereo, you should select two adjacent inputs (1–2, 3–4) so that track editing can be performed more efficiently.

If you are recording from a connected mic, locate the mic at a sufficient distance from the D1600 so that it does not pick up noise.

Connections for recording digital sources

- Optical digital (S/P DIF) output of a digital output device such as DAT or MD [S/P DIF IN] jack of the D1600 (use an optical digital cable for connection)

For details on assigning the audio inputs to mixer channels and auditioning the input sound, refer to p.23.

④ **Make other connections.**

Connections for mixdown

Here's how to make connections when the song created on the D1600 will be mixed down on an external recording device (DAT, MD, tape recorder, etc.)

- Optical digital (S/P DIF) input of a digital recording device such as DAT or MD ↔ [S/P DIF OUT] of the D1600
- AUX IN inputs of an analog recording device such as a cassette tape recorder ↔ [MASTER OUT L/R] jacks of the D1600

Connections when using external effects

If you wish to apply an external effect to the signal from [AUX OUT] send output, use the [INPUT 1]–[INPUT 8] jacks to receive the return signal(s).
In this case, you can choose whether the signal(s) will be returned to the mixer channel(s) in the same way as a conventional input, or sent directly to the master bus. (→p.48)

Connections when using a foot switch to perform manual punch recording, or playback/stop etc.

Connect the pedal switch (separately sold option: PS-1) to the [FOOT SW] jack.

Connections when using a foot pedal to control effects

Connect the expression pedal (separately sold option: EXP-2, XVP-10) to the [EXPRESSION PEDAL] connector.

If a volume pedal is connected, it will not operate correctly.

Connections when controlling effects or switching scenes from an external MIDI device

Connect the MIDI OUT connector of the external MIDI device ↔ [MIDI IN] connector of the D1600. (→p.73)

Connections when synchronizing the D1600 and a MIDI sequencer etc.

Connect the MIDI IN connector of the sequencer etc. ↔ [MIDI OUT] connector of the D1600. (use a MIDI cable)
Connect the MIDI OUT connector of the sequencer etc. ↔ [MIDI IN] connector of the D1600. (→p.73)

Connections when saving or backing up data on an external hard disk or removable disk

SCSI connector of the external SCSI device ↔ [SCSI] connector of the D1600 (use a SCSI cable to make connections). (→p.67)

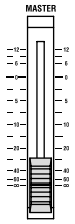
2. Turning the power on/off

Turning the power on

Use the following procedure to turn on the power of the D1600 and of the devices connected to it.

Before turning the power on, be sure to lower the volume of each device to the minimum position, and turn the devices on beginning with the first device in the signal chain (i.e., devices that produce audio signals).

① **Lower the D1600's [MASTER] fader to the – ∞ position. Also turn down the volume of each connected device.**



② **Turn on the power of the external input device, such as a keyboard connected to the D1600. If an external drive is connected, turn on the power of the external drive.**

③ **Turn on the [Main power] of the D1600.**
The STANDBY LED will light. The D1600 will be in "standby" mode.

④ **Press the [POWER] key of the D1600 to turn on the power.**
The opening message will appear in the LCD screen, and then the [SONG] "SelSong" tab page will appear. The selected song will be the one that had been selected when the power was last turned off.

⑤ **Turn on the power of your external equipment, such as the monitor system to which audio is being sent from the D1600.**

Turning the power off

When you are finished playing or recording a song, turn off the power. If you will not be using the D1600 for an extended (e.g., when you have finished work for the day), be sure to turn off the main power so that the power is turned off completely. Use the following procedure to turn off the power of the D1600 and of the connected devices.

Before turning off the power, turn the volume of all devices down to the minimum position, and turn off the power switches beginning with the devices that are at the end of the audio signal chain.

When you wish to turn off the power, you must perform the shutdown operation. Never turn off the [Main power] switch or disconnect the power

cable until the shutdown has been completed. If you turn off the main power or disconnect the power cable before shutdown is complete, data or user settings may be lost, or you may damage the hard disk.

Audio that is recorded on the D1600 and the mixer settings you make are saved automatically when you select or switch songs, or when you shut down. However, effects that you edit will be lost unless you save them.

① **If you wish to keep any effect settings that you edited, save them. (→p.46)**

② **Lower the [MASTER] fader of the D1600 to the –∞ position. Lower the volume of any external devices to the minimum position.**

③ **Turn off the power of the external output devices (such as your monitor system) to which audio is being sent from the D1600.**

④ **Press and hold the D1600's [POWER] key to perform the shutdown operation.**
When you press and hold the [POWER] key, a dialog box will appear, asking you to confirm the operation. If you press the "Yes" button, the song will automatically be saved and the D1600 will shut down and enter standby condition. If you press the "No" button, you will return to the previous screen.

⑤ **By pressing the D1600 [Main power] switch to turn it off, you can turn the power off completely.**

⑥ **If an external drive is connected, turn off the power of the external drive.**

⑦ **Turn off the power of external input devices, such as keyboards.**

Listening to the demo song

The D1600 comes with a demo CD that contains demo songs. Here's how to listen to the demo songs on the CD.

note This operation requires a separately sold CD-R/RW drive (such as the CDRW-2).

The included demo CD is different than conventional audio CD's. Never attempt to use it in an audio CD player.

① **Connect your CD-R/RW drive.**
If you are using an internal CD-R/RW drive, install the CD-R/RW drive in the CD-R/RW drive bay of the D1600. (→p.134)
If you are using an external CD-R/RW drive, connect the CD-R/RW drive to the SCSI connector of the D1600. (→p.67)

② **Restore (load) the demo songs from the demo CD into the D1600. (→p.66: Backup/Restore)**

③ **Move the D1600's [CHANNEL] faders to the 0 mark, and the [MASTER] fader to the –∞ mark.**

④ **Select the song that you wish to play back. (→p.22)**

⑤ **For each track, make the [TRACK STATUS] key LED light green. If any LED's are lit another color, or are dark, press the corresponding key to make the LED light green (PLAY).**

⑥ **Press the [PLAY] key to begin playback.**

⑦ **Slowly raise the [MASTER] fader to adjust the volume level.**

⑧ **When the demo song ends, press the [STOP] key to stop playback.**

Step 2. Creating/selecting a song

In order to record a new song, you must first create a new song. Here's how to create a song, assign a name to it, and select songs.

1. Creating a new song

① **Press the [SONG] key to access the "SelSong" tab page.**

② **Press the "New" button.**
The "MakeNewSong" dialog box will appear.

③ **Select the quantization bits/number of tracks for the song that will be created, and select the mixer settings.**
Use the "SongType" radio buttons to select the number of bits and tracks. Set the "MixerSet" radio buttons in the same way. (→p.89 "SongType," "MixerSet")

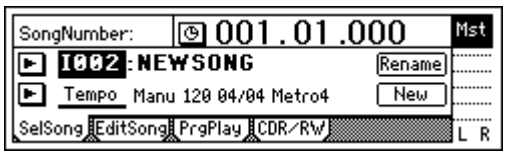
④ **Press the "OK" button.**
A song named "NEWSONG" will be created following the last song that currently exists.
For details on deleting a song, refer to p.60.

2. Naming a song

Now you can assign a name to the newly created song.

We recommend that you assign a name to the song before recording it, so that it can be distinguished from other songs.
If you wish to change the name of another song, select that song before you begin the following procedure. (→"3. Selecting another song")

① **Press the [SONG] key to access the "SelSong" tab page.**



② **Press the "Rename" button.**
The "RenameSong" dialog box will appear.

③ **Modify the song name.**
Use the "◄" "►" buttons to move the cursor in the song name to the character that you wish to change, and rotate the [VALUE] dial to modify the name.

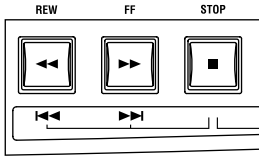
The buttons in the LCD screen have the following function.
"A../a..": Select alphabetical characters (e.g., "A"). Press the button once again to select lowercase alphabetical characters (e.g., "a").
"0...9": Select numerals (e.g., "0").
"Symbol": Select symbols.
"Insert": Insert a space and move the subsequent characters backward.
"Space": Select a space (blank).
"Backsp": Delete the character before the cursor location.
"Delete": Delete the character at the cursor location.
"ClearAll": Erase the entire name.

④ **Finalize the name.**
If you are satisfied with the name you input, press the "OK" button. To cancel without changing the name, press the "Cancel" button.

3. Selecting another song

This section explains how to select songs.
There are three ways to select an existing song.

[STOP] key + [FF] key, [STOP] + [REW] key



Use this method to select the song of the previous or next number on the same drive.

- Hold down the **[STOP] key** and press the **[FF] key** to move to the end of the current song. Press these keys once again to move to the beginning of the next song.
- When you hold down the **[STOP] key** and press the **[REW] key**, you will move to the beginning of the previous song if you were already at the beginning of the song (e.g., "**000:00.000**"). If you were at a location during the song, you will move to the beginning of that song.

Move the edit cell to the song number, and rotate the [VALUE] dial

Use this method to select another song in the same drive.

① **Press the [SONG] key to access the "SelSong" tab page.**

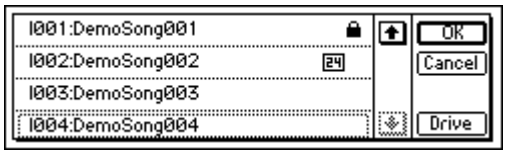
② **Select "SongNumber" (it will be highlighted), and rotate the [VALUE] dial to select the song num.**

Select from the song list (Selecting a song from another drive)

Use this method to select another song in the same drive, or to select a song from another drive.

① **Press the [SONG] key to access the "SelSong" tab page.**

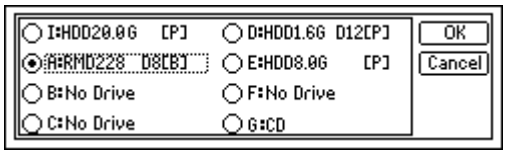
② **Press the "▶-" button at the left of the song number.**
The song list will appear.



③ **Rotate the [VALUE] dial to select a song in the song list. Then press the "OK" button.**

To change the drive

To change the drive, press the "Drive" button and select a drive from the list. Press the "OK" button to return to the song list.



Drive ID
Each connected drive is assigned a different "Drive ID" according to its SCSI ID.
I: Internal IDE (internal drive)
A–G: SCSI ID numbers 0–6

note If a separately sold CD-R/RW drive is installed, it will automatically be assigned to "**G**".

note If you connect a CD-R or CD-RW drive to the [SCSI] connector, set the SCSI ID of the drive to "**6**" (assigning it to "**G**"). A hard disk drive can also be assigned this number.

If a CD-ROM drive, a CD-R or CD-RW drive, or a hard disk set to "Drive ID" "G" is connected to the [SCSI] connector, the internal CD-RW drive option cannot be used.

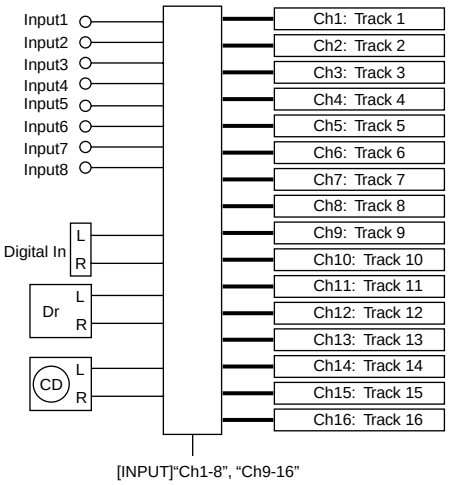
Device Type, Total Size
This shows information on the drive (type and capacity).
HDD: Hard Disk Drive
RMD: Removable Disk Drive
CD: CD-ROM, CD-R, CD-RW
* Removable disk drive is a collective term for drives from which the disk can be removed, such as MO, Zip, or Jaz.

Format Type
This shows the format type of the drive.
Internal drives of the D1600 and external drives formatted or initialized while connected to the D1600 will be displayed as [P] or playback drive, which can be used to record songs. Other drives will be displayed as [B] or backup drives which you can backup and restore songs from.

Step 3. Assign audio inputs to the mixer

The D1600 provides eight channels of analog input and one (two-channel) digital input jack. In order to record the audio signals from these inputs, they must be assigned to mixer channels. If the CDRW-2 CD-R/RW drive option (sold separately) is installed, you can also assign the signal from an audio CD to the mixer channels.

* The audio of the internal CD-R/RW drive is connected as an analog signal.



In this section we will explain how to assign each type of input source to mixer channels, and audition the source.

note The D1600, the input **mixer channel numbers** are the same as the recording and playback **track numbers**. For example if you wish to record on track 8, you must assign the audio signal to mixer channel 8.

1. Analog inputs

Use the connections and settings most applicable to your situation.

- Connect a guitar to the [GUITAR IN] jack, and assign it to mixer channel 8
- Connect a condenser mic audio input source to [INPUT 2], and assign it to mixer channel 2.
- Connect a keyboard to the [INPUT 3] and [INPUT 4] jacks, and assign them to mixer channels 9 and 10

note If you are using stereo input, you should use adjacent inputs (1–2, 3–4), and input the signals to adjacent mixer channels.

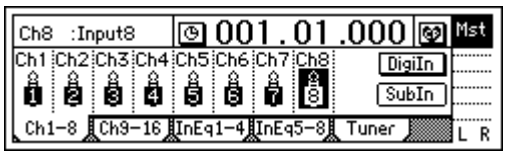
note Before you proceed, create a new song as described in "1. Creating a new song" (→p.21).

Connect a guitar to the [GUITAR IN] jack, and assign it to mixer channel 8

① **Connect your guitar.**
Set the [INPUT 8] ([GUITAR IN]) [TRIM] to the **minimum** (+4 dB) and lower the [MASTER] fader before connecting your guitar to the [GUITAR IN] jack.

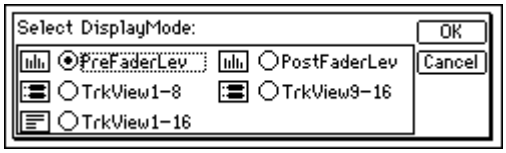
② **Select the input channel.**
- Access the [INPUT] "Ch1–8" tab page.
- Select the "Ch8" icon, and rotate the [VALUE] dial to select "**INPUT 8**."

The input from the [GUITAR IN] jack has now been assigned to mixer channel 8.

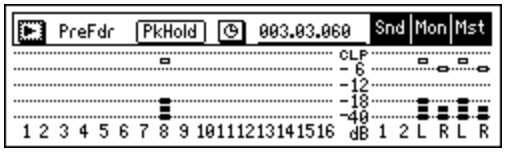


③ **Assign the input sound to mixer channel 8.**
Press the track 8 [TRACK STATUS] key to set it to **INPUT** (LED lit orange).

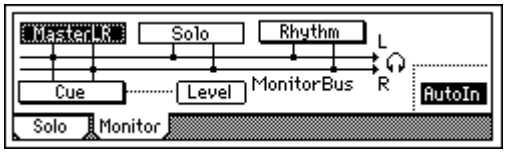
④ **Use the trim to adjust the input level.**
Press the [METER/TRACK VIEW] key. Press the "▶" button to access the dialog box.



Press the "**PreFaderLev**" radio button, and press the "OK" button.
Play your guitar to input sound, and the level meter of Ch.8 will move accordingly. Adjust the INPUT 8 [TRIM] knob while watching the level meter. Raise the [TRIM] as high as possible without the level reaching **CLP**, while playing your guitar.



⑤ **Audition the sound.**
- Set the [MASTER] and [CHANNEL 8] faders to **unity gain** (0 dB).
- Access the [SOLO/MONITOR] "Monitor" tab page.
- Press the "MasterLR" button to turn it "**On**" (highlighted).
- Gradually raise the [PHONES LEVEL] knob or [MONITOR OUT LEVEL] knob, and listen to the sound in your headphones or monitor system.



Connect a mic to [INPUT 2] and assign it to mixer channel 2

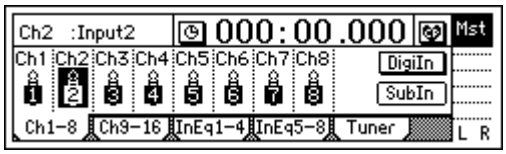
① **Connect a mic.**
Set the INPUT 2 [TRIM] to the minimum (+4 dB), lower the D1600's [MASTER] fader, and connect a mic to the **[INPUT 2] jack**.
If you are using a condenser mic, turn on phantom power for [INPUT 2] after you connect the mic.

Turn phantom power on only if you are using a condenser mic.

Phantom power must be turned on after connecting the condenser mic. If you connect or disconnect the mic with phantom power turned on, your equipment may be damaged.

② **Specify the input channel.**
- Access the [INPUT] "Ch1–8" tab page.
- Select the "Ch2" icon, and rotate the [VALUE] dial to select "**INPUT 2**."

The input from the [INPUT 2] has now been assigned to mixer channel 2.



③ **Assign the input sound to mixer channel 2.**
Press the track 2 [TRACK STATUS] key to select INPUT (the LED will light orange).

④ **Use trim to adjust the internal.**
- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to access the dialog box. Choose "**PreFaderLev**," press the "OK" button.
- When you input sound into the mic, the Ch2 level meter will move accordingly.
- Adjust the input 2 [TRIM] knob while you watch the level meter. Raise the [TRIM] as high as possible. Don't allow the level to reach **CLP** when you produce your loudest sound.

⑤ **Audition the sound.**
- Set the [MASTER], [CHANNEL 2] faders to **unity gain** (0 dB).
- Access the [SOLO/MONITOR] "Monitor" tab page.
- Press the "MasterLR" button to turn it "On" (highlighted).
- Gradually raise the [PHONES LEVEL] knob or [MONITOR OUT LEVEL] knob, and listen to the sound in your headphones or monitor system.

Connect a keyboard to the [INPUT 3] and [INPUT 4] jacks, and assign them to mixer channels 9 and 10.

① **Connect your keyboard.**
Set the [INPUT 3] and [INPUT 4] trim to the minimum (+4 dB) and lower the [MASTER] fader before connecting your keyboard to the [INPUT 3] and [INPUT 4] jacks.

② **Select the input channels.**
- Access the [INPUT] "Ch9–16" page tab.
- Select the "Ch9" icon, and rotate the [VALUE] dial to select "**INPUT 3**."
- Select the "Ch10" icon, and rotate the [VALUE] dial to select "**INPUT 4**."

The input from the [INPUT 3] and [INPUT 4] jacks has now been assigned to mixer channels 9 and 10.

③ **Assign the input sound to mixer channels 9 and 10.**
Press the track 9/10 [TRACK STATUS] keys to set each of them to INPUT (LED lit orange).

④ **Use the trim to adjust the input level.**
- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to access the dialog box. Choose "**PreFaderLev**," press the "OK" button.
- Play your keyboard to input sound, and the level meters of Ch.9 and Ch.10 will move accordingly. Adjust the INPUT 3 and 4 [TRIM] knobs while watching the level meter. Raise the [TRIM] level as high as possible, don't allow the level to reach **CLP** when you play your keyboard with maximum velocity.

⑤ **Audition the sound.**
- Set the [MASTER], [CHANNEL 9] and [CHANNEL 10] faders to **unity gain** (0 dB).
- Access the [SOLO/MONITOR] "Monitor" tab page.
- Press the "MasterLR" button to turn it "On" (highlighted). Gradually raise the [PHONES LEVEL] knob or [MONITOR OUT LEVEL] knob, and listen to the sound in your headphones or monitor system.

2. Digital input

The D1600 can record a digital audio signal that is input via the S/P DIF jack.

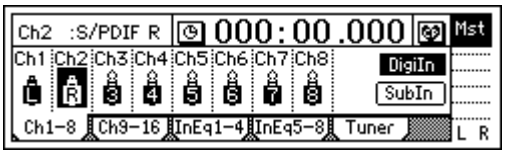
The S/P DIF input has a built-in sampling rate converter. Sources with sampling rates of 48 kHz or 32 kHz can be connected directly, and will automatically be converted to 44.1 kHz.

Here we will explain how the audio from a DAT connected to the [S/P DIF IN] jack can be input to mixer channels 1 and 2.

① **Connect the digital output device.**
Lower the [MASTER] fader of the D1600, and use an optical digital cable to connect the digital output of your DAT to the [S/P DIF IN] jack.

② **Enable the digital input.**
- Access the [INPUT] "Ch1–8" tab page.
- When you press the "**DigiIn**" button, a message of "**Obey Copyright Rules**" will appear.

Carefully read the owner's manual section "COPYRIGHT WARNING" (→p.1). If you accept the terms, press the "Yes" button for the "AreYouSure?" prompt. Digital input will be enabled.



③ **Specify the input channels.**
Select the "Ch1" icon, and rotate the [VALUE] dial to select "**S/PDIF L**." In the same way, select "**S/PDIF R**" for "Ch2."
The input from the [S/P DIF IN] jack has now been assigned to channels 1 and 2.

④ **Assign the input sound to mixer channels 1 and 2.**
Play back the DAT, and press the [TRACK STATUS] keys of tracks 1 and 2 to set them to **INPUT** (LED lit orange).

⑤ **Check the recording mode and input level, and audition the sound.**
Refer to steps ③, ④, and ⑤ of "Connect a guitar to the [GUITAR IN] jack, and assign it to mixer channel 8."

3. Using the tuner

Here's how you can tune a sound that is being input.

① **Use "SelectSource" to select the source that you wish to tune.**
- If you wish to tune an instrument such as a guitar, connect the instrument to the [INPUT 8/GUITAR IN] jack.
- In the [INPUT] "Tuner" tab page, set "SelectSource" to "**Input8**."

② **Set "Calib" to specify the reference frequency.**

③ **Adjust or measure the pitch.**
The "Note Display" shows the note name, and the "CENT Scale" shows the pitch.
- If you selected "**Input8**," play your instrument to produce sound, and tune it so that the central triangle is displayed as "▼."

To measure the pitch of a previously-recorded sound

- To measure the pitch of a previously-recorded track, set "SelectSource" to "**Track**," and choose the track that you wish to measure. Move to the time location that you wish to measure, press the [PLAY] key to play back, and measure the note name and pitch.

Step 4. Recording

This section explains the basic recording procedure on the D1600.

During recording, the audio signal flows in the order of input → mixer channel → recorder.

1. Adjust the recording level, and record

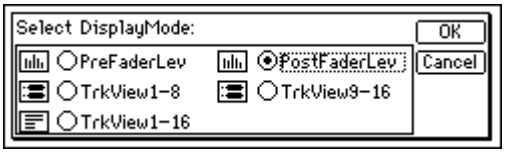
Here's how to record the audio that you specified in "Assign audio inputs to the mixer" (→p.23).

note If you wish to create a new song and record into it, refer to "1. Creating a new song" (→p.21). Make sure that the [RHSL] key is **Off**. (→p.112)

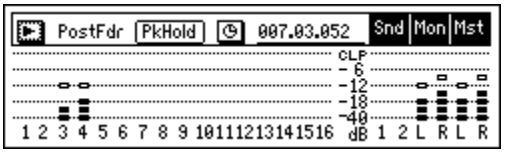
① **Check the recording mode.**
Access the [RECORD] "RecMode" tab page.
Set "Select RecMode" to "**Input**" (i.e., the audio input will be recorded).

Use the [CHANNEL] fader to set the recording level.

- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to select "**PostFaderLev**," and press the "OK" button.



- Gradually raise the [CHANNEL] fader, and the level meter of the input channel will change according to the input. Raise the level as far as possible without allowing the level bar to reach "**CLP**."



② **Move the current time to the location where you wish to begin recording. (→p.35)**
Start recording from the beginning of the song ("**001.01.000**" or "**000:00.000**").

③ **Press the [TRACK STATUS] key of the track that you wish to record, to set the status to REC (LED lit red).**

④ **Enter record-ready mode.**
Press the [REC] key. (The [REC] and [PLAY] LEDs will blink.)

⑤ **Start recording.**
Press the [PLAY] key. (The [REC] and [PLAY] LEDs will light.)
Begin playing.

⑥ **Stop recording.**
When you have finished playing, press the [STOP] key. (The [REC] and [PLAY] LEDs will turn off.)

note When you have finished recording, verify that the performance was recorded correctly.

⑦ **Move to the beginning of the song (→p.35).**

⑧ **Specify the track(s) for playback.**
Press the [TRACK STATUS] key of the track you recorded, to set its status to **PLAY** (LED lit green).

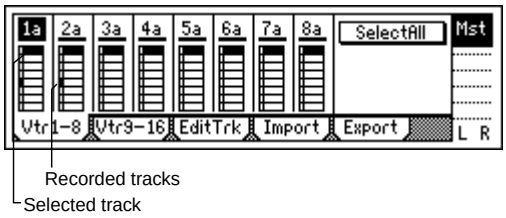
⑨ **Begin playback.**
Press the [PLAY] key. (The [PLAY] LED will light.)

⑩ **Stop playback.**
When you are finished playing back, press the [STOP] key. (The [PLAY] LED will turn off.)

2. Recording on virtual tracks

The D1600 has sixteen tracks, and each of these tracks has **eight virtual tracks**.

For example when recording a solo part, you can switch between **several virtual tracks** to record different performances on each, and select the best performance later. Or when using bounce (ping-pong) recording, you can specify an **unrecorded virtual track** as the recording destination, so that you can mixdown into two tracks without erasing any of the sixteen tracks. (→p.29)



Recording on a virtual track

① **Select the virtual track.**
In the [TRACK] "Vtr1–8" or "Vtr9–16" tab page, select the track that you wish to record, and use the [VALUE] dial to select an open virtual track.

② **Adjust the recording level of the input device, and record.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23).

3. Playback while recording addition tracks: Overdubbing

The process of listening to previously-recorded tracks while you record additional tracks is called **overdubbing**. For example, this can be used to record a solo while you listen to previously-recorded backing tracks.

① **Select the playback tracks.**
Press the [TRACK STATUS] keys of the tracks that you wish to play back, to set them to **PLAY** mode (LED lit green).

② **Select the recording track.**
Press the [TRACK STATUS] key of the track that you wish to record, to set it to **REC** mode (LED blinking red).

③ **Lower the faders of tracks you are not using.**
Press the [TRACK STATUS] key of the tracks that are not being recorded or played, to set them to **MUTE** (LED dark). This will silence the tracks that are not being recorded or played.

④ **Adjust the recording level of the input device, and record.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27)

In the [RECORD] "RecMode" tab page, set "Select Rec Mode" to "**Input**."

4. Re-record part of a performance: Punch-in/out

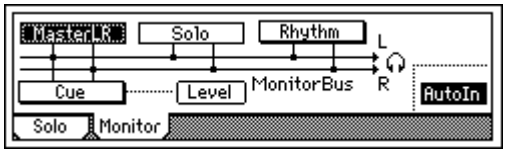
If you make a mistake during part of your recorded performance, or are not completely satisfied with your performance, you can re-record just the unsatisfactory portion without having to record from the beginning of the song.
"**Punch-in**" is when you switch the song from playback to record, and "**punch-out**" is when you switch the song from record back into playback.

Manual punch-in/out

Manual punch-in/out is when you manually switch between punch-in and punch-out.
On the D1600, manual punch-in/out can be performed by pressing the [REC] key or a **PS-1** foot switch (separately sold option) during playback to begin recording, and pressing the [REC] key, [PLAY] key, or foot switch to end recording.

① **Connect the input device, and adjust the recording level.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27).

② **Make monitor output settings.**
- Access the [SOLO/MONITOR] "Monitor" tab page.



- Select the signal that you wish to monitor. (→p.110)
- Turn the "AutoIn" button "On." (→p.110)

note If the "AutoIn" button is "Off", you will always hear the input signal that is assigned to the recording track. If it is "On", the sound recorded on that track will be heard during playback, and the assigned input signal will automatically be heard during recording.

③ **Move the current time to a location earlier than the point where you wish to begin re-recording. (→p.35)**

④ **Press the [PLAY] key to begin playback.**
The song will play back, and you will hear the sound of the playback tracks and the track selected for recording.

⑤ **At the point where you wish to begin re-recording, press the [REC] key.**
Recording will begin (**manual punch-in**), and you will begin hearing the external input signal.

⑥ **At the point where you wish to stop re-recording, press the [REC] key or [PLAY] key.**
Recording will stop, and the track will switch back to playback (**manual punch-out**). You will begin hearing the track playback.

⑦ **Press the [STOP] key to stop.**
After recording, move the current time to a point earlier than where you began recording, and check that the recording was satisfactory.

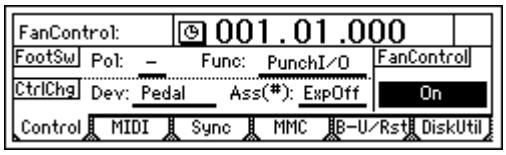
Manual punch-in/out using a foot switch

You can switch between playback and recording by pressing a PS-1 foot switch (separately sold option). This allows you to switch between playback and recording while you are performing on an instrument, or when you are at a distance from the D1600.

① **Connect a foot switch to the [FOOT SW] jack.**

② **Access the [SYSTEM] "Control" tab page.**

③ **Specify the function of the foot switch.**
Select "Func (FootSwFunction)" to "**PunchI/O**."



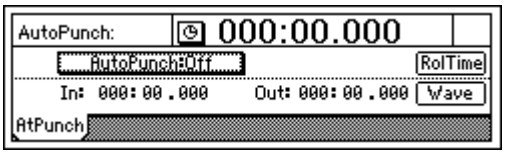
④ **In "Manual punch-in/out" steps ⑤ and ⑥, perform manual punch-in/out by pressing the foot switch instead of the [REC] key (you may use either).**

note You can also use the foot switch to record from the beginning of the song.
- Set the "Func" parameter of step ③ to "**Play/Stop**."
- Press the [REC] key at the beginning of the song (LED will blink), and press the foot switch to start recording.

Auto punch-in/out

Auto punch-in/out is when punch-in and punch-out occur automatically at pre-specified times.

① **Access the [AUTO PUNCH] "AtPunch" tab page.**



② **Register IN (punch-in) as the time at which recording will begin, and OUT (punch-out) as the time at which recording will end.**
For details on registering the **IN** and **OUT** times, refer to p.35.
In the [AUTO PUNCH] "AtPunch" tab page, you can press the "Wave" button to register the IN and OUT points while viewing a waveform display.

note The time locations you register will be overwritten onto the [IN/LOC1] key and [OUT/LOC2] key.

③ **Connect the input device, and adjust the recording level.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27).

④ **Make monitor output settings.**
Refer to "Manual punch-in/out" step ②. (→p.28)

⑤ **Specify the "pre-roll" – the length of playback that will occur before the recording start location.**
In the [AUTO PUNCH] "AtPunch" tab page, press the "RolTime" button to access the "SetRollTime" dialog box. (→p.98)
- Set "PreRoll" to the desired length of playback before the beginning of recording. Set "PostRoll" to the desired length of playback after the end of recording. Set "Unit" to the desired unit of pre/post-roll time.
- When you have finished making settings, press the "OK" button to return to the previous page.

⑥ **Turn on the auto punch-in/out function.**
In the [AUTO PUNCH] "AtPunch" tab page, press the "AutoPunch" button to turn it "**On**." The [AUTO PUNCH] key will light.

⑦ **Begin recording.**
- When you press the [REC] key, the location will move back from the specified record start time by the length of the pre-roll time specified by "PreRoll," and the D1600 will enter record-ready mode (LED blinking).
- When you press the [PLAY] key, playback will begin. The track will play back during the pre-roll time, and will switch to recording at the specified point (IN). (The [REC] LED will light.)
- When the specified end of recording is reached, recording will end. (The [REC] LED will blink.)

⑧ **Press the [STOP] key to stop.**

note After the post-roll time has elapsed, the D1600 will stop and return to the beginning of the pre-roll time.

⑨ **Listen to the performance that you recorded.**

5. Combining multiple tracks into two: Bounce

You can combine the performances of multiple tracks into two tracks, thus freeing up the original tracks for additional recording. This procedure is called **bouncing**. You can use this when you wish to play back the performances of more than 16 tracks simultaneously.

You can use bounce recording to do the following things.
- Combine 16 tracks of audio, and overwrite-record them onto two tracks.
- Combine 16 tracks of audio, and record them onto two unused virtual tracks.
- Record 14 tracks of audio and two external input signals onto the remaining two tracks.
- Combine multiple external input sources, and record them on two tracks.

note When you use a CD-R/RW drive to create an audio CD, the data of tracks 1 and 2 will be written to the CD, so you must combine your completed song into tracks 1 and 2.

note You can also mix down your completed song to two tracks of the D1600, instead of mixing down to an external two-channel recorder.

Combining 16 tracks of audio and overwriting them onto 2 tracks

As an example, here's how to combine the audio of tracks 1–16, and overwrite-record the result onto tracks 1 and 2.

① **Select bounce recording as the recording mode.**
- Access the [RECORD] "RecMode" tab page.
- Select "Bounce" (bounce recording).

② **Select the bounce mode.**
- Access the [RECORD] "Bounce" tab page.
- Set "BounceMode" to "**16Tr→2Tr**."

③ **Choose the currently selected tracks for recording.**
Set "RecordVirtualTrack" to "**Current**."

④ **Select the tracks that you wish to record.**
Set the status of the tracks to be recorded (tracks 1 and 2) to **REC** (LED lit red). Set the remaining tracks (3–16) to **PLAY** (LED lit green).

⑤ **Adjust the stereo positions of the playback tracks.**
Press the [PLAY] key, and rotate the [PAN] knob to adjust the stereo positions of channels 1–16.

⑥ **Adjust the playback/recording levels.**
Use the [CHANNEL] faders to adjust the playback level.
- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to access the dialog box. Select "**PostFaderLev**" so that you can view the meter display for each fader.

⑦ **Use the [MASTER] fader to adjust the recording level.**
When you are finished making adjustments, press the [STOP] key.

⑧ **Move the current location to the beginning of the song. (→p.35)**

⑨ **Begin bounce recording.**
Press the [REC] key to enter record-ready mode (LED blinking), and then press the [PLAY] key to begin recording (LED lit).

⑩ **When recording is finished, press the [STOP] key to stop.**

⑪ **Listen to the recording.**
- Press the [TRACK STATUS] keys of the recording tracks (1 and 2) to set them to **PLAY** (LED lit green).
- Either lower the faders of the other channels, or turn the [SOLO/MONITOR] "Solo" tab page "1," "2" setting "On."
- Press the [PLAY] key to listen to the playback, and then press the [STOP] key to stop.

Recording 16 tracks of audio to 2 virtual tracks that are not currently selected

As an example, here's how the audio of tracks 1–16 (virtual track "a" selected for all tracks) can be recorded to virtual track "b" of tracks 1 and 2.

○ **Perform bounce recording as described in "Combining 16 tracks of audio and overwriting them onto 2 tracks" (→p.29). However in step ③, change the "Record Virtual Track" setting to "b," so that the recording will occur on virtual track "b."**

○ **To listen to the result of the recording, select virtual track "b."**

Access the [TRACK] "Vtr1–8" tab page, and set "SelectVirtualTrack" to "**1b**" and "**2b**" for tracks 1 and 2.

Recording 14 tracks of audio and 2 external input sources on the remaining 2 tracks

Here's how the audio of tracks 1–14 and the audio inputs from INPUT 1 and 2 can be recorded on tracks 15 and 16.

① **Specify the input channels.**
- Access the [INPUT] "Ch9–16" tab page.
- Set "Ch15" to "**INPUT1**, and set "Ch16" to "**INPUT2**."

② **Set the recording mode to bounce recording.**
- Access the [RECORD] "RecMode" tab page.
- Select "**Bounce**" (bounce recording).

③ **Select the bounce mode.**
- Access the [RECORD] "Bounce" tab page.
- Set "BounceMode" to "**14Tr+2In→2Tr**."

④ **Choose the currently selected tracks for recording.**
Set "RecordVirtualTrack" to "**Current**."

⑤ **Select the tracks for playback and recording.**
Press each [TRACK STATUS] key to set the playback tracks (1–14) to **PLAY** (LED lit green) and the recording tracks (15 and 16) to **REC** (LED lit red).

⑥ **Adjust the stereo positions of the playback tracks and the input sources.**
Press the [PLAY] key, and rotate the [PAN] knob to adjust the stereo positions of channels 1–14. Set channel 15 to the left, and channel 16 to the right.

⑦ **Adjust the playback/input levels.**
Use the [CHANNEL] faders to adjust the playback level and input level.
- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to access the dialog box. Select "**PostFaderLev**" so that you can view the meter display for each fader.

⑧ **Adjust the recording level.**
Use the [MASTER] fader to adjust the recording level.
When you are finished making adjustments, press the [STOP] key.

⑨ **Start bounce recording.**
Refer to steps ⑧–⑪ of "Combining 16 tracks of audio and overwriting them onto 2 tracks" (→p.29).

note After recording or track editing, you can use Undo to return the data to the state before recording or track editing (→p.99). After returning to the state before recording, don't forget to set tracks 15, 16 back to virtual track "**a**."

Record eight external input audio sources onto two tracks

As an example, here's how the audio sources being input to INPUT 1–8 can be overwritten onto tracks 1 and 2.

① **Specify the input channels.**
- Access the [INPUT] "Ch1-8" tab page.
- Assign "Ch1"–"Ch8" respectively to "INPUT1"–"INPUT8."

② **Select bounce recording as the recording mode.**
- Access the [RECORD] "RecMode" tab page.
- Select "Bounce" (bounce recording).

③ **Select the bounce mode.**
- Access the [RECORD] "Bounce" tab page.
- For "BounceMode," select 14Tr+2In→2Tr."

④ **Record on the currently selected tracks.**
Set "RecordVirtualTrack" to "Current."

⑤ **Select the tracks for recording and for audio input.**
Press the [TRACK STATUS] key to set the recording tracks (1 and 2) to REC (LED lit red), set the other input tracks (3–8) to INPUT (LED lit orange), and set the remaining tracks (9–16) to MUTE (LED dark).

⑥ **Adjust the panning of the input sources.**
Rotate the [PAN] knobs to adjust the stereo position for 1–8.

⑦ **Adjust the input levels.**
Use the [CHANNEL] faders to adjust the input levels.
- Press the [METER/TRACK VIEW] key.
- Press the "▶" button to open the dialog box. In the dialog box, select "**PostFaderLev**," and you will be able to view a meter display for each fader.

⑧ **Adjust the volume level.**
Use the [MASTER] fader to adjust the recording level.

⑨ **Begin mix recording.**
Refer to steps ⑧–⑪ of "Combining 16 tracks of audio and overwriting them onto 2 tracks" (→p.29).

Other recording methods

Trigger recording

This is a function that uses the input level (trigger) to initiate recording. Recording will begin at the instant that sound is input to the D1600.

① **Connect the input device, and set the recording level.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27).

② **Select trigger recording.**
Access the [TRIGGER] "Trigger" tab page, and turn "TriggerRec" **On** (the [TRIGGER] key will light).

③ **Press the [REC] key to enter record-ready mode (LED blinking).**

④ **Begin playing.**
When the input level exceeds the threshold level ("Threshold"), recording will begin automatically.

note Refer to "Threshold" and "PreTrigTime." (→p.100)

note You can use the Rehearsal function to check the threshold level.

⑤ **When you have finished playing, press the [STOP] key to stop.**

Loop recording

When using auto-punch recording, you can use Loop recording to record repeated takes over the same section, and then use undo/redo to choose the best take.
If you turn "Loop" "**On**" during auto-punch recording, the **IN–OUT** region will be recorded repeatedly (looped).
At this time, playback will occur before and after the **IN–OUT** region for the lengths specified by the [AUTO PUNCH] "AtPunch" tab page settings for "RolTime" ("PreRoll" and "PostRoll").

① **Register the region (IN–OUT) that you wish to record. (→p.35)**
This setting can also be made using "**Wave**" in the [LOOP] "Loop" or [AUTO PUNCH] "AtPunch" tab pages.

② **Connect the input device, and adjust the recording level.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27).

③ **Specify how the sound will be output for monitoring.**
Refer to "Manual punch-in/out" ②. (→p.28)

④ **Set the pre-roll and post-roll.**
- In the [AUTO PUNCH] "AtPunch" tab page, select "**RolTime**."
- Set "PreRoll" to specify the length of playback prior to the beginning of recording, and set "PostRoll" to specify the length of playback after the end of recording. Set "Unit" to select the units in which the pre/post-roll times are set.
- When you have made these settings, press the "OK" button.

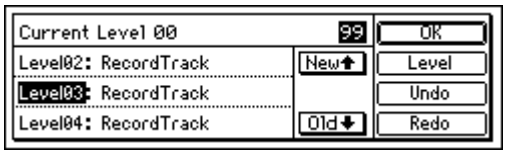
⑤ **In the [AUTO PUNCH] "AtPunch" tab page, turn "Auto Punch" "On." (The [AUTO PUNCH] key will light.)**

⑥ **In the [LOOP] "Loop" tab page, turn "Loop" "On."**

⑦ **Begin recording.**
- When you press the [REC] key, the D1600 will locate to the beginning of the pre-roll time preceding the IN (recording start) point, and will enter record-ready mode. (The [REC] key LED will blink.)
- Press the [PLAY] key to begin playback. Playback will occur for the pre-roll time, and recording will begin at the IN time. (The [REC] key LED will light.)
  When the OUT time is reached, recording will end, and playback will continue for the post-roll time. (The [REC] key LED will blink.)
  Then the D1600 will locate to the beginning of the pre-roll time, and the same operations will be repeated.
- To stop, press the [STOP] key at a point outside of the recording area (IN–OUT).

⑧ **Listen to the recorded content.**
Use the undo/redo function to select the best take.

⑨ **Press the [UNDO] key.**
A list will show the latest and previous recordings.



⑩ **Rotate the [VALUE] dial to select what you believe to be the best take from the list.**

⑪ **Press the "Undo" button to execute the Undo.**
The selected take will be recalled.

⑫ **Play back, and verify that you selected the correct take.**
If the [AutoPunch] "AtPunch" tab page "AutoPunch" setting is "**On**" when you press the [PLAY] key, the region between the recording start (**IN**) and recording end (**OUT**) points will play back as a loop.

⑬ **If you decide to cancel the Undo, press the "Redo" button to return to the "Level00" take.**
The **undo** operation you executed in step ⑪ will be cancelled.
Press the "OK" button to return to the previous screen.

In addition to the recording methods described above, the following possibilities are available when recording on the D1600. For details refer to the page listed.

- Apply **EQ** to the audio being recorded. (→p.38)
- Apply **effects** to the audio being recorded. (→p.44)
- Listen to the internal **rhythm** while recording your performance. (→p.61)
- Record the internal **rhythm**. (→p.61)
- **Rehearse** the recording. (→p.112)

Step 5. Playback

This section explains basic playback on the D1600, and also how to use program playback.

1. Playback

① **Select the track(s) for playback.**
Press the [TRACK STATUS] keys for the tracks that you wish to play, to put them in PLAY (LED lit green).

② **Move to the time location from which you wish to playback.**
For details on changing the time location, refer to p.35.

③ **Begin playback.**
Press the [PLAY] key. (The [PLAY] LED will light.)

④ **Stop playback.**
Press the [STOP] key. (The [PLAY] LED will turn off.)

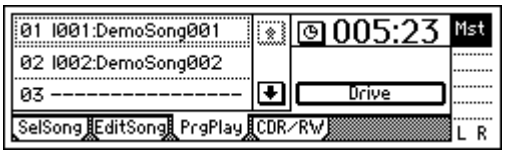
note You can also use a **PS-1** foot switch (separately sold option) to start and stop playback. (→p.75)

2. Program play

Here's how you can play back multiple songs in the order you specify.
In addition to using this to play songs in a desired order, this function is also convenient when mixing down to DAT or MD.

Setting up a program

① **Access the [SONG] "PrgPlay" tab page.**



② **Select the first song.**
Use the scroll buttons to select "01" in the program play list, and rotate the [VALUE] dial to select a song. If you wish to change the drive, press the "Drive" button. Select the desired drive in the "Drive Select" screen.

③ **Select the second, third, and subsequent songs in the same way.**

note To **delete** a song from the list, select the song and rotate the [VALUE] dial to select "– – –."

note The program play list is maintained until you turn off the power.

The program play list can be played only when the "PrgPlay" tab page is displayed.

Playing the program Playlist

① **Access the [SONG] "PrgPlay" tab page.**

② **Press the [PLAY] key to begin playback.**
Songs will be played in the order of the list, starting with the first song of the program. During playback you can press the [FF] key to skip to the next song, or the [REW] key to skip to the beginning of the current song or (if you are already at the beginning of the current song) to the beginning of the previous song.

③ **Press the [STOP] key to stop playback.**

Other playback options

Loop playback

This function repeatedly plays the IN–OUT region of the song. This is convenient when you wish to audition that region, and is also used in conjunction with auto punch recording to perform loop recording. (→p.31)

① **Select the playback track.**
Press the [TRACK STATUS] key of the playback track(s) to select **PLAY** (LED lit green).

② **Register the desired region (IN–OUT) for loop playback. (→p.97)**
You can also set this by using "**Wave**" in [LOOP] "Loop" or [AUTO PUNCH] "AtPunch" tab page.

③ **Access the [LOOP] "Loop" tab page, and turn the "Loop" button "On."**

④ **Begin loop playback.**
When you press the [PLAY] key, playback will begin from the **IN** location, and repeat over the **IN–OUT** region.

⑤ **Press the [STOP] key to stop.**

In addition to the playback methods described above, the following playback methods are also available on the D1600. For details refer to the page given.

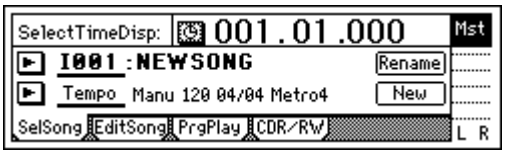
- Apply EQ to the playback audio. (→p.37)
- Adjust the level and pan of the playback audio. (→p.37)
- Apply effects to the playback audio. (→p.43)
- Play the built-in rhythms together with the playback. (→p.61)

Step 6. Changing the time location

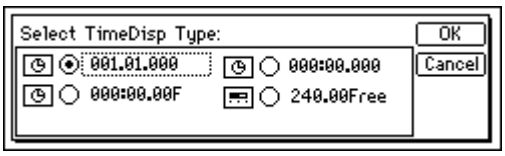
This section explains how you can move the counter that shows the current location within the song.

1. Switching the counter display

You can switch the time display type shown by the counter.



① **Press the "◷" button located at the left of the counter to access the "Select TimeDisp Type" dialog box.**



② **Select the type of time units that you wish to view, press the "OK" button.**
You can select one of the following four types of display.

- ___.__.___ "measures" . "beats" . "1/96 of a beat"
- ___:__.___ "minutes" : "seconds" . "1/1000 of a second"
- ___:__.__**F** "minutes" : "seconds" . "1/30 of a second"
- ___.__ **Free** "minutes" . "seconds" (remaining available recording time)

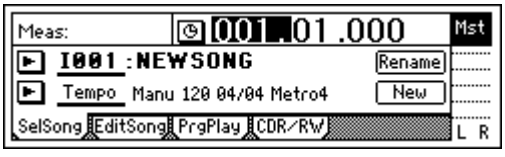
note In order for the "__.__ Free" display to accurately indicate the remaining time, you must set the recording track [TRACK STATUS] to **REC**, and set the counter display to "FreeTime." When you do so, the remaining recording time will be displayed according to the number of tracks that are set to **REC**.

2. Moving the current time location

Using the counter

① **Select a page in which the counter is displayed in the upper part of the LCD screen, such as the [SONG] "SelSong" tab page.**

② **Select the portion in the counter that you wish to change to a new location.**



③ **Rotate the [VALUE] dial to change the time.**

Using the [FF] or [REW] keys

Moving backward

Press the **[REW] key** to move toward the beginning of the song. If you hold down the key, you will rewind continuously.
You can also rewind during playback.

Moving forward

Press the **[FF] key** to move toward the end of the song. If you hold down the key, you will fast-foward continuously.
You can also fast foward during playback.

Moving to the beginning of the song

While in the middle of the song, hold down the [STOP] key and press the [REW] key to return to the beginning of the song.

Moving to the end of the song

While in the middle of the song, hold down the [STOP] key and press the [FF] key to jump to the end of the song.

Using the locate keys to move (LOC1, LOC2, LOC3, LOC4)

You can register specific times in the locate keys, and jump instantly to those times.
Up to **four** locate points can be registered for each song.
Use the [IN/LOC1], [OUT/LOC2], [TO/LOC3], and [END/LOC4] keys.

note In addition to recalling the locate times that you register, these keys are also used to specify the time locations for auto punch recording (IN/OUT times) and for track editing (the editing region). For details on the various locate functions, refer to p.97.

Registering a locate point

① **Move the current time to the location that you wish to register.**
Use the counter ("Counter") or the [FF]/[REW] keys to change the current time.

② **Press the [STORE] key to capture the selected time location.**

③ **Register the time location you captured.**
Press one of the [IN/LOC1], [OUT/LOC2], [TO/LOC3], or [END/LOC4] keys to register the saved location in that key. The registration will be completed as soon as you press the key.

note Even if you perform steps ② and following during playback or recording, the time location at the moment you pressed the [STORE] key will be preserved, and can be registered in a locate point.

Moving to a locate point

When you press a previously-registered [IN/LOC1], [OUT/LOC2], [TO/LOC3], or [END/LOC4] key, you will move to the registered location.

Using marks to move the time location

You can register a specific location in a **mark**, and then move instantly to the registered location.
A name can be assigned to each mark, and used to navigate within a song.
Up to **100** marks can be registered in each song.

Registering a mark

① **Move the current time to the location that you wish to register as a mark.**
Use the counter or the [FF]/[REW] keys to change the current time.

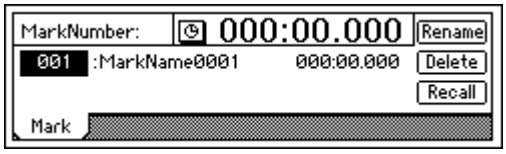
② **Press the [STORE] key to capture the time location.**

③ **Register the time location you captured.**
Press the [MARK] key to register the captured time location as a mark. The registration will be completed at the moment you press the key. Marks will be renumbered in order of time.

note Even if you perform steps ② and following during playback or recording, the time location at the moment you pressed the [STORE] key will be captured, and can be registered in a mark.

Moving to a mark location

① **Access the [MARK] "Mark" tab page.**



② **Use "MarkNumber" to select the desired mark.**

③ **Press the "Recall" button to recall the mark.**
You will move to the time location of that mark.

Deleting a mark

Undo is not available after deleting a mark.

① **Access the [MARK] "Mark" tab page.**

② **Use "MarkNumber" to select the mark that you wish to delete.**

③ **Press the "Delete" button to access the dialog box.**

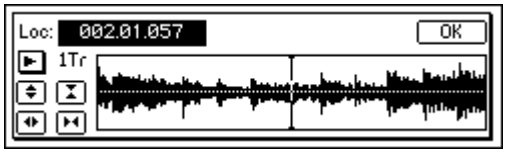
④ **Verify the "mark number to be deleted" in the upper left. If you wish to delete it, press the "Yes" button to delete it. If you decide not to delete it, press the "No" button.**
To delete all marks, press the "SelectAll" button to turn it "**On**." Then press the "Yes" button to delete the marks.

Naming a mark

- Press the "Rename" button to access the "Rename-Mark" dialog box. For the rename procedure, refer to "2. Naming a song" (→p.21).
- When you have assigned a name, press the "OK" button.

3. Using scrub playback etc. to find a precise time location

By using the **Scrub function**, the **Play From/To function**, or the **Slow Play function**, you can accurately find the location where the audio region begins, or set a locate time or mark time with greater precision.



Using the Scrub function

① **Press the [TRACK STATUS] key of the track that you wish to search, setting its track status to PLAY (LED lit green).**

② **Press the [SCRUB] key to turn the Scrub function "On" (key lit).**

③ **Use "TrackSelect" to select the track that you wish to play.**

④ **Select "Loc," and rotate the [VALUE] dial to find the location while listening to the audio.**
The audio will play back in correspondence with the rotation of the [VALUE] dial.

Step 7. Using the mixer

Here you can adjust various mixer settings such as, volume, tone, pan, recording and playback, to create the most desirable levels for your song.

For details on adjusting the effects, refer to p.43

1. Adjusting the volume

The input or recording/playback volume is adjusted by the [CHANNEL] faders. Raise or lower the faders to adjust the volume. (→p.112)
The volume can be adjusted from silence (–∞) to unity gain (**0 dB**) to **+12 dB** gain.

note Normally, you should set the faders at unity gain (the position where the input signal is output at the same volume) and then lower the faders for any channels that are too loud, rather than raising the faders of channels that are too soft. This will reduce the possibility of clipping at the final stage, and is the most effective way to mix.

- When **Pairing** is on, use the odd-numbered channel fader to make adjustments. (→p.38)
- Volume settings can be registered in a **scene**. (→p.39)

2. Adjusting the stereo position

Rotate the [PAN] knob to adjust the stereo position of each channel.

Channel 1–16 [PAN] knobs
Rotating the knob toward the L position will place the sound toward the left, and rotating it toward the R position will place the sound toward the right.

note Normally, vocals and bass are located in the center, guitar at the left or right, and piano at the opposite side from guitar.

- When **Pairing** is on, use the odd-numbered channel knob to make adjustments. (→p.38)
- These settings can be registered in a **scene**. (→p.39)

If the pan is paired (=Balance) for channels 1/2–15/16, set the odd-numbered [PAN] of the paired channels to the center when you wish to input to tracks 1/2–15/16 and record in stereo.

3. Using EQ to adjust the tone

The tone of each channel can be adjusted by a three-band equalizer (EQ).

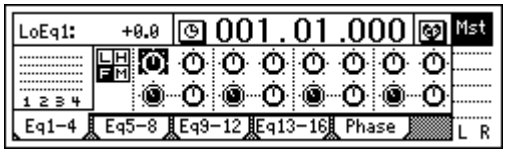
- To adjust the input sound (analog), use the **Input EQ** ([INPUT] "InEq1–4," "InEq5–8" tab pages).
  This will affect the sound that is recorded.
- To adjust the track playback sound, use the **EQ** ([EQ/PHASE] "Eq1–4," "Eq5–8," "Eq9–12," "Eq13–16" tab pages).

note EQ can be used to cut a frequency range in which unwanted noise (hiss) is heard, or to boost/cut the low or high range to correct the tone.
Normally, you should make EQ settings so that the audio is heard more clearly.
If you use EQ excessively by boosting the EQ gain of a channel to the maximum setting, the overall mix will become unbalanced. EQ can be used in the "cut" (Minus) direction as well.

Applying EQ to the track playback

- When **Pairing** is on, use the odd-numbered channel "Eq" to make adjustments. (→p.38)
- These settings can be registered in a **scene**. (→p.39)

① **Select the tab page that contains the EQ you wish to adjust.**
Select from the [EQ/PHASE] "Eq1–4," "Eq5–8," "Eq9–12" and "Eq13–16" tab pages.



② **Select the desired EQ.**
For each channel, the EQ controls are arranged as follows.
- High EQ gain (H): upper right icon
- Low EQ gain (L): upper left icon
- Mid EQ gain (M): lower right icon
- Mid EQ cutoff frequency (F): lower left icon

③ **Adjust the gain and cutoff frequency settings.**
Gain will be cut as you increase the value in the "–" direction, and boosted as you increase the value in the "+" direction.
Cutoff frequency will be raised as you increase the value, and lowered as you decrease the value.

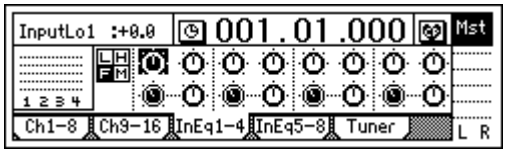
High EQ, Low EG
- For the channel that you wish to adjust, select "High EQ Gain (H)" or "Low EQ Gain (L)," and rotate the [VALUE] dial to set the amount of gain. The value is displayed in the upper left of the screen.

Mid EQ
- For the channel that you wish to adjust, select "Mid EQ Cutoff Frequency (F)," and rotate the [VALUE] dial to set the cutoff frequency. The value is displayed in the upper left of the screen.
- For the channel that you wish to adjust, select "Mid EQ Gain," and rotate the [VALUE] dial to set the gain. The value is displayed in the upper left of the screen.

Applying input EQ to the analog inputs/ Recording with input EQ

You can apply input EQ to the analog inputs (EQ cannot be applied to the digital input), and record the sound that has been adjusted by the EQ.

① **Access the page that includes the channel to which you wish to apply EQ.**
Select the [INPUT] "InEq1–4" tab page.



② **Input an audio signal, and adjust it to an appropriate level.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27)
Verify that the level meter on the left side of the LCD screen moves, when you hear the sound.

③ **For each "InputEQ," select the gain settings and mid EQ cutoff frequency, and rotate the [VALUE] dial to adjust them. (→p.37 ② ③)**

④ **Record the sound as adjusted by the EQ.**
Refer to "1. Adjust the recording level, and record" (→p.27).

4. Pairing

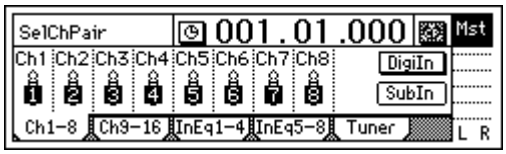
Adjacent odd and even-numbered channels (1–2, 3–4, 5–6, 7–8, 9–10, 11–12, 13–14, 15–16) can be **paired**, so that changing a value for the odd-numbered channel will simultaneously change the value for both channels. It is convenient to use mixer pairing for stereo-recorded channels.

Pairing is valid for the following settings.

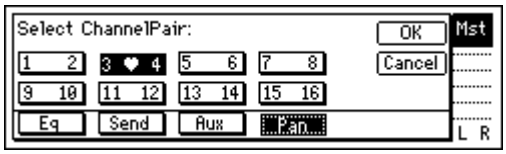
- [TRACK STATUS] keys
- EQ (channel EQ)
- EffSnd 1 + 2 (effect send)
- AuxSend (auxiliary send)
- [PAN] knobs
- [CHANNEL] faders

note With the exception of the [TRACK STATUS] keys and the [CHANNEL] faders, you can select whether or not pairing will be enabled for a parameter. This selection is made simultaneously for both Effect Sends 1 and 2.

① **Access the "Select Pair" screen.**
Press the "♥" (SelChPair) button found in the [INPUT], [EQ/PHASE], or [INSERT EFFECT] pages to access the "Select ChannelPair" screen.



② **Select the channels for which you wish to enable pairing.**
Press a "**1 2**"–"**15 16**" button to turn it "**On**" (highlighted as "♥").



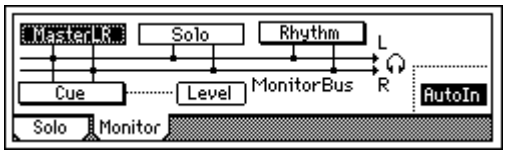
③ **Select the functions for which pairing will be enabled.**
Select the functions that will be paired for the channels you selected in "Select ChannelPair."
From "**Eq**," "**Send**," "**Aux**," and "**Pan**," press the functions that you wish to enable to turn on each function. To finalize the settings, press the "OK" button.

5. Monitor settings

In order to monitor the audio from the D1600, you will need to connect a set of powered monitor speakers etc. to the [MONITOR OUT L/R] jacks, or connect headphones to the [PHONES] jack.

Select the signal for monitoring

① **Select the signal that you wish to monitor.**
- Access the [SOLO/MONITOR] "Monitor" tab page.
- Normally you will select "MasterLR."
Press the "MasterLR" button to turn it "**On**" (highlighted).



note If "Solo" is selected, the solo function will take priority. Defeat "Solo" before you make your selection.

② **Select input monitoring.**
During playback you will hear the playback tracks of mixer channels whose [TRACK STATUS] is set to **PLAY** (LED lit green). For mixer channels whose [TRACK STATUS] is **REC** (LED lit red), you will hear the external input sound.

note If you press the "AutoIn" button to turn it "On", mixer channels whose [TRACK STATUS] is **REC** will monitor the track playback during playback, and will automatically switch to monitoring the external input sound when recording (and rehearsing) and when stopped.

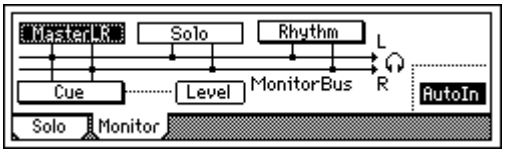
③ **Adjust the monitor volume.**
Use the [MONITOR OUT LEVEL] knob to adjust the monitor volume of the [MONITOR OUT L/R] jacks, and use the [PHONES LEVEL] knob to adjust the monitor volume of the [PHONES] jack.

Adjusting the cue level

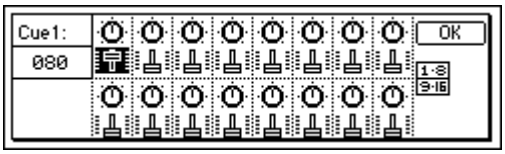
Since the [CHANNEL] faders of the D1600 adjust both the recording level of the tracks and the volume level of each channel, the recording level and the monitoring level will be the same.
For this reason, a **Cue Level** function is provided so that you can adjust the monitoring volume and pan for your convenience while you record, independently of the master LR volume.

① **Select cue as the monitoring source.**
In the [SOLO/MONITOR] "Monitor" tab page, turn "**On**" the "Cue" button.

note If "Solo" is selected, solo will be given priority. Defeat "Solo" before you make your selection.



② **Adjust the cue level.**
Press the "Level" button to access the cue level adjustment screen. Select the icons for each channel, and rotate the [VALUE] dial to adjust the volume level and pan displayed in the upper left.



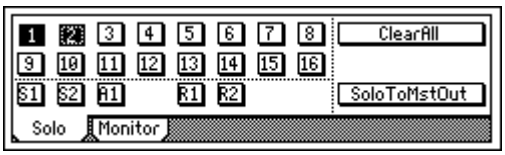
6. Solo settings

Only the signals whose "Solo" button is "**On**" will be sent to the monitor bus. Use this function when you wish to hear a specific channel out of numerous sources, or to audition the send audio, etc. The solo signal is output from the [MONITOR OUT L/R] jacks and the [PHONES] jack.

Select the signal for soloing

① **Select the signal for soloing, and turn Solo "On."**
Access the [SOLO/MONITOR] "Solo" tab page. Press the desired "Solo" button(s) to turn Solo "On" for that signal (it will be highlighted). If even one selection is being soloed, the [SOLO/MONITOR] key will blink.

note You can select more than one signal to solo.



② **Adjust the monitor volume.**
Use the [MONITOR OUT LEVEL] knob or [PHONES LEVEL] knob to adjust the volume level.

To turn solo off

- Access the [SOLO/MONITOR] "Solo" tab page, and turn the "Solo" button "**Off**."
- By pressing the "ClearAll" button, you can turn off all solo settings.

Outputting the solo signal from master LR

If desired, the solo signal can be output from [MASTER OUT L/R]. Do this when you wish to output the solo signal from a monitor system connected to the [MASTER OUT L/R] jacks.

○ **In the [SOLO/MONITOR] "Solo" tab page, turn the "SoloToMstOut" button "On" (highlighted).**
However, this will automatically be turned **off** when you exit the [SOLO/MONITOR] page.

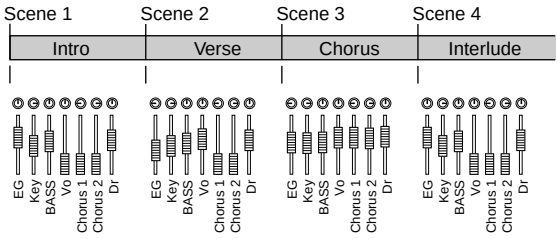
7. Registering and playing scenes

Mixer settings you make can be registered as a scene, and selected automatically as playback progresses. Frequently-used settings can also be registered and recalled when desired to reproduce the mixer settings at another time, or part of the settings can be modified and overwritten.

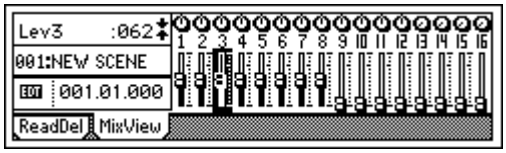
note Up to 100 scenes can be registered for each song.

The following settings can be registered in a scene.

- EQ
- Effect settings
- EffSnd (effect send)
- AuxSend (auxiliary send)
- [PAN] knob
- [CHANNEL] fader



note The faders and pan knob on the top panel do not actually move, but you can watch the values change in the [SCENE] "MixView" tab page.



Registering a scene

① **Move the current time to the location at which you wish to register the scene.**
Use the counter or [FF]/[REW] keys to move. (→p.35)

② **Adjust the mixer settings.**
Adjust the [CHANNEL] faders, [PAN] knobs, EQ and effect settings.

③ **Register the scene.**
- Press the [STORE] key to capture the current time location.
- When you press the [SCENE] key, the registration destination scene number "SCENE ***" will be displayed, and the settings will be registered.

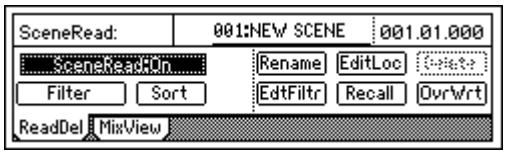
note Registered scenes are assigned numbers sequentially, starting at the lowest unused number.
Even during playback or recording, you can use step ③ above to register a scene.

Automatically switching scenes while a song plays: Scene Playback

Scenes you registered can be selected automatically during playback at the time locations you specify.

note Register each scene at the time location where you want the mixer settings to change. (→"Registering a scene")

① **Turn "SceneRead" "On."**
- Access the [SCENE] "ReadDel" tab page.



- Press the "SceneRead" button to turn it "**On**." When this is "On", the [SCENE] key will light.

② **Play back the song.**
Move to the desired location, and press the [PLAY] key to begin playback.
When playback reaches the registered time, the scene will change automatically.

Recalling a scene

Here's how to recall mixer settings that you registered in a scene.

① **Turn "SceneRead" "Off."**
- Access the [SCENE] "ReadDel" tab page.
- Press the "SceneRead" button to turn it "**Off**." When this is "Off", the [SCENE] key will turn off.

If "SceneRead" is "**On**", it will not be possible to recall a scene that was registered at a different time location.

② **Recall the scene.**
In the [SCENE] "ReadDel" or "MixView" tab page, move the cursor to "SceneNumber," and rotate the [VALUE] dial to select the desired scene. The selected scene will be recalled.

Re-registering a scene at another time location

Here's how you can re-register a previously registered scene at a different time location.

① **Recall the scene that contains the mixer settings you wish to re-register.**
Select the scene as described in "Recalling a scene."

② **Move the current time to the location at which you wish to re-register the scene. (→p.35)**

③ **Register the scene.**
Press the [STORE] key, and then the [SCENE] key.

Editing a scene and overwriting it

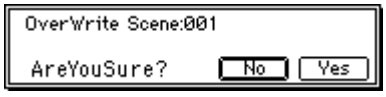
Here's how you can modify part of a scene, and overwrite the settings back onto that scene.

① **Recall a scene.**
As described in "Recalling a scene," select the scene that you wish to modify.

② **Modify the settings of the scene.**
Adjust the [CHANNEL] faders, [PAN] knobs, EQ, and effects as desired.

③ **Overwrite the scene.**
- In the [SCENE] "ReadDel" tab page, make sure that the number of the scene you modified is selected.
- Press the "OvrWrt" button.

A dialog box will ask you for confirmation. When you press the "Yes" button, the scene will be overwritten onto that number.



Deleting a scene

Here's how to delete an unwanted scene.

Undo is not available for this operation.

① **Recall the scene.**
As described in "Recalling a scene," recall the scene that you wish to delete. If you wish to delete all scenes, select any of the scenes.

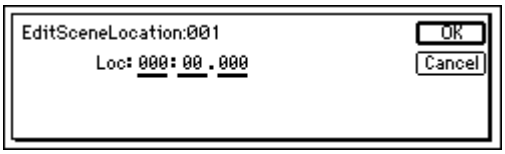
② **Delete the scene(s).**
In the [SCENE] "ReadDel" tab page, press the "Delete" button. Verify the "Delete scene number" in the upper left, and if you wish to delete the scene, press the "Yes" button to delete the scene. If you press the "No" button, the scene will not be deleted.
If you wish to delete all scenes, press the "SelectAll" button to turn it "**On**." Then press the "Yes" button to delete all the scenes.

Moving a registered scene to another time location

Here's how to move a registered scene to another time location.

① **Recall the scene.**
As described in "Recalling a scene," recall the scene that you wish to move.

② **Move the time location of the scene.**
- Press the "EditLoc" button.

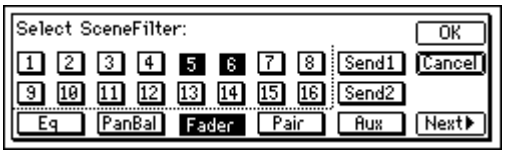


- Specify the time location in the dialog box, press the "OK" button to execute the move.

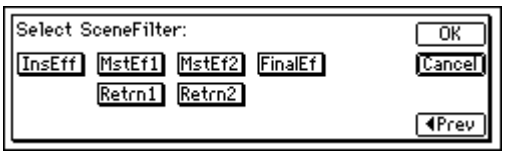
Scene filtering

① **In the [SCENE] "ReadDel" tab page, press the "Filter" button to display "Select SceneFilter."**

② **Select the parameters whose settings you wish to disable.**
There are two pages of settings, and you can use the "Next" button to access the next page.



The first page contains settings for the parameters of each channel. For example you can use the filter to disable the pan settings for channels 5 and 6 by turning the "**5**," "**6**," and "**Fader**" buttons "**On**."



The second page contains settings for overall parameters. As in the first page, turn **on** the parameters that you wish to disable. Press the "OK" button to finalize the settings.

Using MIDI to control scenes

MIDI output

When the scene changes, a scene change message (program change) will be transmitted. This message will be transmitted in the following cases.

- When you use "SceneNumber" to switch scenes in the [SCENE] "ReadDel" tab page
- When you press the [STORE] key and [SCENE] key to register a scene
- When "SceneRead" is "**On**" and the scene changes during playback or recording

MIDI input

If "SceneRead" is "**Off**", scene change messages (program changes) that are received will cause the D1600 to select the scene of the corresponding number.
If "SceneRead" is "**On**", these messages will not be received, regardless of whether the D1600 is playing, recording, or stopped.

① **Connect the external MIDI device. (→p.73)**

② **Make MIDI settings.**
In the [SYSTEM] "MIDI" tab page, set "GlobalCh" to the channel of the external MIDI device that will be transmitting the messages.
To transmit MIDI messages, turn the [SYSTEM] "MIDI" tab page "ProgChange" "Trans" "On."
To receive MIDI messages, turn the [SYSTEM] "MIDI" tab page "ProgChange" "Recv" "On."

③ **In the [SCENE] "ReadDel" tab page, turn "SceneRead" "Off."**

④ **Transmit a program change from the external MIDI device to recall a scene.**
When the D1600 receives program change #0, it will recall scene **001**. Program changes #0–99 correspond to scene **001–100**.

Step 8. Using effects

Overview of the effects

On the D1600, you can use up to eight **insert effects** that can be inserted into an analog input or mixer channel, two **master effects** that can be applied to the send from each channel, and a **final effect** that can be applied to master LR as the last stage. Each of these effects are independent, meaning that you can use a maximum of eleven effect programs simultaneously.

- Effect algorithms: total of 98
- Effect programs:

	Presets (192)	User (192)
Insert effects	I000, I001–I128	U001–U128
Master effects	M000, M001–M032	u001–u032
Final effects	F000, F001–F032	u033–u064

Preset effects contain effect programs created by professional musicians and studio engineers.
User effects can store your own effect programs that you created by editing a preset effect.

note It is not possible to rewrite a preset effect program.

1. Insert effects

The **insert effects** can be inserted into an analog input or mixer channel, to apply an effect to the analog input signal or playback track. Effects can also be applied to a built-in rhythm sound that is input to a mixer channel.

There are four types of insert effects, as described below. The available effect programs will depend on the effect type you select. (→p.105, 113)

- **1 in 2 out x 2, 1 in 1 out x 2 (input only)**
  These are **mono-in/stereo-out** or **mono-out** effect chains consisting of three to five effects. Two of these chains can be used. These are ideal for adding spaciousness to a lead guitar or vocal.

- **2 in 2 out x 2**
  These are **stereo-in/stereo-out** effects such as reverb, chorus, and delay. Two such effects can be used simultaneously. These are ideal for stereo-input sources such as keyboard.

- **1 in 1 out x 4**
  These are **mono-in/mono-out** effect chains consisting of two effects. Four such effects can be used simultaneously. These are ideal for sources whose stereo location is fixed, such as rhythm guitar.

- **1 in 1 out x 8**
  Up to eight **mono-in/mono-out** effects can be used. This is ideal for sounds with a fixed pan location, such as drums.

note The effect type selection is made in [INSERT EFFECT] "InsAss" tab page "SelectEffType."

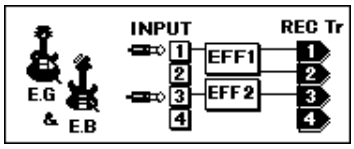
Examples of using the insert effects

Various ways in which insert effects can be used for recording or track playback are described below for each effect type.

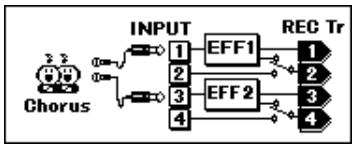
During recording

1 in 2 out x 2 (mono-in/stereo-out × 2)
1 in 1 out x 2 (mono-in/mono-out × 2)

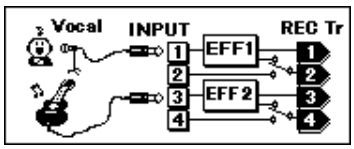
- While recording guitar and bass simultaneously, you could apply Guitar Multi to the guitar and Bass Multi to the bass as you record.



- While recording two vocals simultaneously, you could apply separate Vocal Multi programs to each singer as you record.

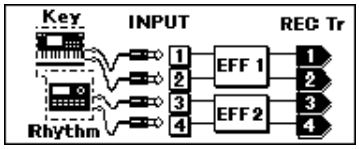


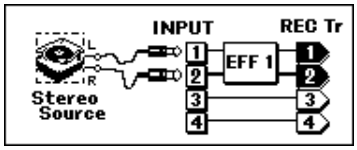
- While recording vocal and guitar simultaneously, you could apply Vocal Multi to the vocal and Guitar Multi to the guitar as you record.

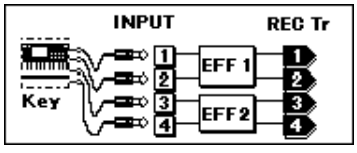


2 in 2 out x 2 (stereo-in/stereo-out × 2)

- While recording keyboard and rhythm machine simultaneously, you could apply St.Chorus to the keyboard and St.Comp to the rhythm machine as you record.
  Other examples are shown below.

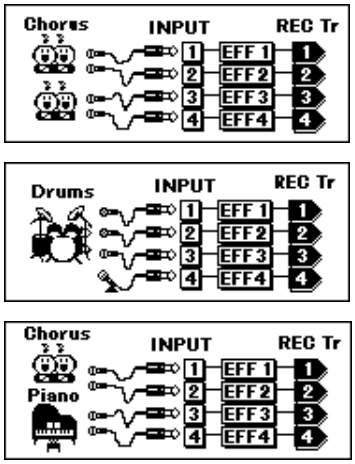






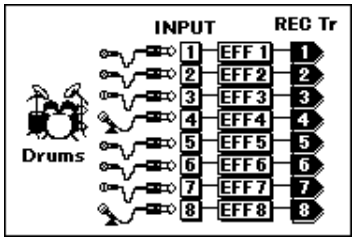
1 in 1 out x 4 (mono-in/mono-out × 4)

- While recording four vocals simultaneously, you could apply Exciter-Comp to voices that lack impact, and apply Limiter-P4EQ to loud voices as you record.
  Other examples are shown below.

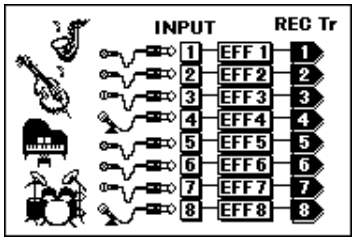


1 in 1out x 8 (mono in/mono out x 8)

- For example when using eight mics to simultaneously record each instrument of a drum set, you can apply a separate effect program to each instrument, such as a **Limiter** to the bass drum, a **Gate** to the snare drum, and an **Exciter** to the tom while you record.



- When using eight mics to record multiple instruments simultaneously, you could apply **Gate** to each instrument to reduce crosstalk between the mics, or apply **Limiter** to adjust the dynamics.



During track playback

2 in 2 out x 2 (stereo-in/stereo-out × 2)

- Two tracks containing stereo recorded drums etc. could be processed by St.Comp or St.Limiter to adjust the dynamics, or Reverb could be applied to create a broader sense of space.

1 in 1 out x 4 (mono-in/mono-out × 4)

- Exciter-Comp or Limiter-P4EQ could be applied to individual recorded tracks to adjust the dynamics, or P4EQ-Cho/Fln could be applied to add modulation.

1 in 1 out x 8 (mono-in/mono-out × 8)

- Comp, Limiter, Gate, or Expander could be applied to individual recorded tracks to adjust the dynamics, or Chorus, Phaser, or Delay could be applied.

Applying the insert effects while you record (analog/rhythm only)

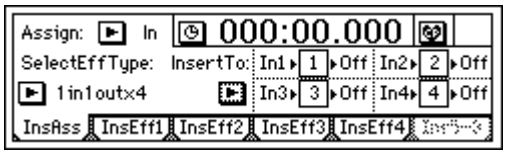
While you record, effects can be applied to the input from an instrument connected to the [INPUT 1] – [INPUT 8/GUITAR IN] analog inputs, or to the built-in rhythm sound that is input to a mixer channel, so that the sound processed by the effect is recorded.

note If an internal CD-R/RW drive (sold separately) is installed, you can also apply effects to the audio from an audio CD.

As an example, here's how to connect a guitar to the [INPUT 8/GUITAR IN] jack, apply effects, and record the sound on track 8.

① **Make connections, and select the track for recording.**
Refer to "Connect a guitar to the [GUITAR IN] jack, and assign it to mixer channel 8" (→p.23).

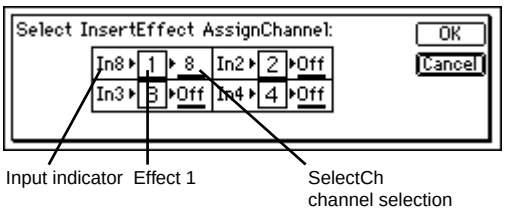
② **Access the [INSERT EFFECT] "InsAss" tab page.**



③ **Press the "Assign:▸" button, and select "Input(In)."**

④ **Press the "SelectEffType:▸" button, and select the effect type.**
In the illustration for step ②, "**1 in 1 out x 4**" has been selected.

⑤ **Insert the effect between INPUT 8 (GUITAR IN) and channel 8.**
- Press the "InsertTo:▸" button.
- For effect 1, use "SelectCh" to set the channel to "**8**."
- After making the settings, press the "OK" button.



⑥ **Select the effect program.**
- Access the [INSERT EFFECT] "InsEff1" tab page.
- Select "EffectNumber," and rotate the [VALUE] dial to select the desired effect program.

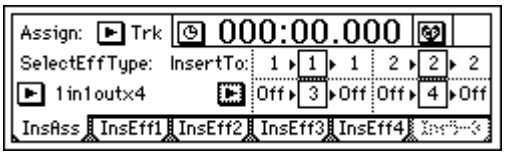
⑦ **As described in "1. Adjust the recording level, and record" (→p.27), adjust the record level and then record.**

Applying an insert effect to a track during playback

Here's how an insert effect can be inserted into a mixer channel, and applied to the track playback.

① **Select the track(s) that you wish to playback.**
Press the [TRACK STATUS] key of one or more recorded tracks to set their status to **PLAY** (LED lit green).

② **Access the [INSERT EFFECT] "InsAss" tab page.**



③ **Press the "Assign:▶" button. In the dialog box that appears, select "PlayTrack (Trk)."**

④ **Press the "SelectEffType:▶" button, and select the effect type. (→p.44, 105)**

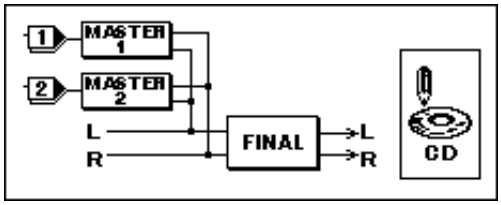
⑤ **Specify the channel into which the effect will be inserted.**
- Press the "InsertTo:▶" button to open the dialog box.
- For each effect, rotate the [VALUE] dial to set "SelectCh" to the input (output) channel.
- After making the settings, press the "OK" button.

⑥ **Select an effect program.**
- Use the [INSERT EFFECT] "InsEff1" or "InsEff2" tab page to select the effect that you wish to use.
- Select "EffectNumber," and rotate the [VALUE] dial to select the desired effect program.

⑦ **Press the [PLAY] key to begin playback.**
You can also select effect programs while you listen to the playback.

2. Master effects

The D1600 contains two master effects (MstEff1 and MstEff2) which can be used simultaneously. You can adjust the send amount from each channel to change the depth of the effect.



How the master effects can be used

The master effects are used mainly for spatial processing (reverb etc.) to create an overall sense of depth and balance.

For example, you could use send 1 for ReverbHall and send 2 for ReverbRoom, in order to use the effects to simulate a complex spatial environment.
In this way, you can combine two different effects to produce results that would not be possible when using only a single effect.

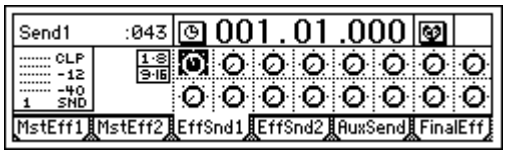
Using the master effects

① **Access the [MASTER EFFECT/AUX] "MstEff1" or "MstEff2" tab page.**

② **Select an effect program.**
Select "EffectNumber," and rotate the [VALUE] dial to select the desired effect program.

③ **Set the return level from the master effect to the master LR, and set the return balance.**
For this example, set "RetLev" (return level) to "**100**," and set "RetBal" (return balance) to "**CNT**."

④ **Adjust the send levels.**
- Adjustments for Master Effect 1 are made in the "EffSnd1" tab page, and for Master Effect 2 in the "EffSnd2" tab page.



- Select the appropriate "Send" icon knob, and rotate the [VALUE] dial to adjust the send amount.
  Play back to hear the output from master LR, and audition the resulting effect.
- Adjust the return level and send level so that CLP does not appear in the master effect level meter.

3. Final effect

One stereo-in stereo-out effect is provided as the final effect. It applies to the master LR output (→diagram on preceding page).

The final effect is used mainly for dynamics processing (compression etc.) to make the overall level more consistent.

During mixdown, you can use the final effect to apply mastering effects such as a multi-band limiter, in order to polish the mix for CD-quality results.

① **Access the [MASTER EFFECT/AUX] "FinalEff" tab page.**

② **Select an effect program.**
Select "EffectNumber," and rotate the [VALUE] dial to select the desired effect program.
Play back, and listen to the output from master LR to hear the result of the effect.

4. Editing an effect

You can edit (modify) the effect programs that are used as insert effects, master effects, and final effects.

If you change the "EffectNumber" or turn off the power without saving, your edited effect settings will be lost. If you wish to keep your edited settings, you must execute the Store operation.

① **Access the page for the effect that you wish to edit.**
This illustration shows the [INSERT EFFECT] "InsEff1" tab page as an example.

② **Select an effect program.**
Select "EffectNumber," and rotate the [VALUE] dial to select the desired effect program.

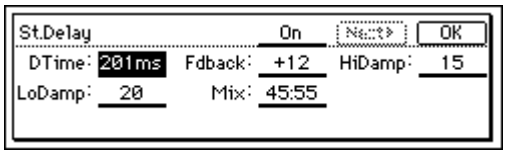
③ **Listen to the sound produced by the effect program.**
Press the "Bypass" button, and bypass will be turned "On" (i.e., the effect will not be applied). Then press the "Cancel" button to turn bypass "Off" (i.e., the effect will be applied). Compare the effect and bypassed sounds.

④ **View the effects and chain that make up the program.**
Press the "(EffectProgramName)" button to access the "EffectAlgorithm" dialog box that displays the structure of that effect program.

⑤ **Turn individual effects on/off as desired.**
Press the "(Effect On/Off)" button located below each "(EffectIcon)," to turn it "On" (highlighted) or "Off."

⑥ **Edit the settings of each effect.**

- Press the "(EffectIcon)" button of the effect that you wish to edit. The screen shown below is the dialog box when "St.Dly" is selected.



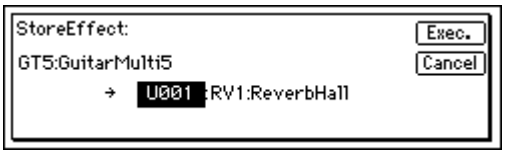
- Select the parameter, and rotate the [VALUE] dial to edit it. For details on each parameter, refer to "Effect Parameter List" (→p.113–).
- You can use "Effect On/Off" in the top of the dialog box to turn the effect on/off. This on/off setting is linked with the "(Effect On/Off)" button of step ⑤. The setting of one will be reflected by the other.
- After making settings, press the "OK" button. If you wish to edit another effect, press the "(EffectIcon)" button, and edit the parameters.
- In the "EffectAlgorithm" dialog box, press the "OK" button.

⑦ **Assign a name to the edited effect program.**

- Press the "Rename" button to access the "RenameEffect" dialog box. For details on the renaming procedure, refer to "2. Naming a song" (→p.21).
- After assigning the name, press the "OK" button.

⑧ **Save the effect program.**

- If the song is playing, press the [STOP] key to stop it.
- Press the "Store" button to access the "StoreEffect" dialog box.



- Specify the number for storing, press the "Exec." button to save the effect program.

When you save the effect program, it will be overwritten onto that number, and the previous settings of that number will be lost.

Controlling an effect from an external device

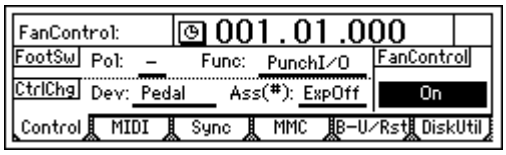
You can also control an insert effect in realtime by using an expression pedal such as the EXP-2 (foot controller) or an external MIDI controller.

For the effect parameters that can be controlled, refer to "Effect Parameter List" (→p.113–)

① **Connect an expression pedal (separately sold option: EXP-2 foot controller) or external MIDI controller. (→p.17)**

② **Select the external device that will control the effect.**

- Access the [SYSTEM] "Control" tab page.
- In "Device (CtrlChgDevice)," select "**Pedal**" if you wish to use an expression pedal, or select a MIDI message if you wish to control via MIDI. (→p.75)

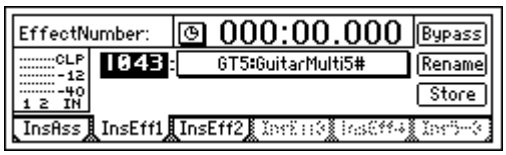


- If you set "Device (CtrlChgDevice)" to be controlled by a MIDI message other than "**Pedal**," you must set the [SYSTEM] "MIDI" tab page "GlobalCh (GlobalChannel)" setting to match the MIDI channel of the external MIDI device that is transmitting the control messages.

③ **Select the insert effect that you wish to control.**
Use "Ass(#) (CtrlChgAssign)" to select the insert effect that will be controlled.

④ **Select the effect program that you wish to control.**

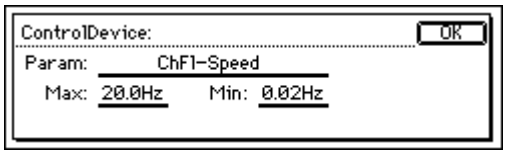
- In the [INSERT EFFECT] "InsEff1"–"InsEff4" tab pages, choose the insert effect that you selected in step ③.
- Select "EffectNumber," and rotate the [VALUE] dial to select the effect program.
  If the selected effect includes a control function, and the conditions allow the effect to be controlled, a "#" symbol will be added at the end of the effect program name.



⑤ **Specify the parameter to be controlled, and the range of control.**

- Press the "(Effect Program Name)" button.
  The "Effect Algorithm" dialog box that makes up that effect program will appear.

- Press the “Cntrl Icon” button to access the “ControlDevice” dialog box.



- Select “Param,” and rotate the [VALUE] dial to select the parameter that you wish to control.
- Rotate the [VALUE] dial to specify the maximum value in “Max,” and the minimum value in “Min.”
- When you have finished making settings, press the “OK” button.
- In the “EffectAlgorithm” dialog box, press the “OK” button.

note If you wish to save the above settings, save your data as described on p.46.

⑥ **Operate the expression pedal or external MIDI controller to control the effect.**

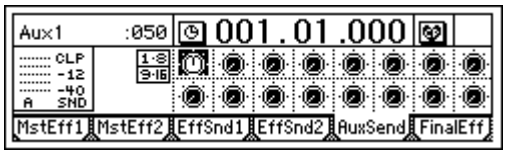
Using an external effect

A send signal can be output from the [AUX OUT] jack, and processed by an external effect. The output of the external effect can then be returned to the [INPUT 1]–[INPUT 8] jacks and sent to the desired channels or to the master LR bus.

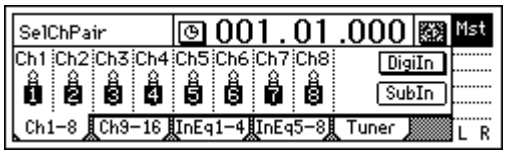
As an example, here’s how the playback sound can be sent to an external effect, and returned to the master LR bus via the [INPUT 3] and [INPUT 4] jacks.

① **Connect your external effect processor.**
Connect the [AUX OUT] jack of the D1600 to the INPUT jack of your external effect processor, and connect the OUTPUT jacks of the external effect processor to the [INPUT 3] and [INPUT 4] jacks of the D1600.

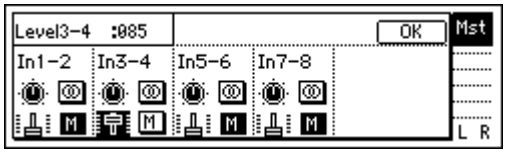
② **Send the playback sound to the external effect.**
- Access the [MASTER EFFECT/AUX] “AuxSend” tab page.
- Select “Aux” for the channel(s) that you wish to send to the external effect, and rotate the [VALUE] dial to adjust the send amount.



③ **Input the audio from the external effect processor.**
- Select the [INPUT] “Ch1–8” or “Ch9–16” tab page.



- Press the “SubIn” button to access the dialog box. Use the “In3–4” “Fader” to adjust the return level, and use “Balance” to adjust the return balance. (→p.50, 102)



Step 9. Mixdown

You can use mixer settings such as EQ, faders, and effects to adjust the audio from each recorded track, and combine the result into two tracks to create your own CD or record it on an external two-channel recorder (DAT recorder, MD recorder, cassette recorder etc.) to create a finished song. This process is called **mixdown**.

1. Creating an audio CD

Here's how you can use a CD-R/RW drive to create an original CD from a song you recorded on the D1600.

In order to create an audio CD, you will need the same amount of free space on your hard disk as occupied by the song you created (i.e., the total of the two tracks). For example if you wish to create an audio CD of a five-minute song, you will need sufficient free space for ten minutes of monaural recording.

① **Listen to the completed song.**
Use the faders and knobs to adjust the volume and pan of each track, and listen to the playback.

note If you wish to enable the scenes you registered, set the [SCENE] "ReadDel" tab page "SceneRead" parameter "On."

② **Bounce your song to two tracks.**
As described in "5. Combining multiple tracks into two: Bounce" (→p.29), bounce the tracks of the song to tracks 1 and 2.

note If a song without a region of silence at the beginning (at time zero) is written to CD, the beginning of the sound may be omitted when the CD is played back. In such cases, insert approximately 0.5 seconds of silence into the beginning of the audio data (time zero) when you mix down to tracks 1/2. (→p.52, 82 "InsertTrack")

③ **Insert a disc into the internal CD-R/RW drive.**
If you are using an external drive, refer to "3. Connecting external drives" (→p.67).

note Set the external CD-R/RW drive to SCSI ID 6.

④ **Access the [SONG] "CDR/RW" tab page.**
Make sure that "CD-R/RW Information" indicates either "BlankDisc" or "song number."

⑤ **Execute the write operation.**
- Press the "WriteToCD" button.
- Select the writing speed.
  4X: Write at quadruple speed.
  2X: Write at double speed.

If you use "4X" to write, you must use a drive that supports 4X speed writing.

- A message of "Obey Copyright Rules" will appear.

Carefully read the owner's manual section "COPYRIGHT WARNING" (→p.1). If you accept the terms, press the "Yes" button for the "AreYouSure?" prompt.
Writing to the CD will begin.

note While the data is being written, you can press the "Abort" button to halt the write operation. However, this will result in an unfinished disc.

⑥ **Complete the process.**
When the data has been written, the display will indicate "Completed."
Press the "OK" button.

note You can press the "CD Monitor" button and verify the data that was entered.

⑦ **If you wish to write more songs, repeat steps ② and ④–⑥. The additional songs will be written after the last song on the CD-R/RW.**

⑧ **Finalize the disc.**
In order for the CD-R/RW you created to be playable on an audio CD player, you must stop, and then press the "Final" button to finalize the disc.

No more songs can be written to a disc that has been finalized. Be sure to write all the desired songs to a disk before you finalize it.

⑨ **Verify the data that was written.**
Press the ▷/□ button to play back, and check that the data was written correctly.

In the case of a disc that has not yet been finalized, a portion of the end of the song may not play back.

Some drives may not be able to play back the CD.

⑩ **Play back the disc on an audio CD player to check it.**
Even when the recommended CD-R/RW media is used, some audio CD players may be unable to play them.

note Since there are cases in which CD-RW media will not play on an audio CD player, we recommend that you use CD-R media.

2. Recording to a master tape

① **Listen to the completed song.**
Use the faders and knobs to adjust the volume and pan of each track, then listen to the playback.

② **Connect your external recording device.**
Refer to "Connections for mixdown" (→p.18).

③ **Record on your external recording device.**
- Playback the D1600 song, and adjust the recording level on your external recorder.
- Begin recording on your external recording device, and playback the D1600.

note You can also use the Program Playback function to play back songs consecutively in the desired order (→p.33).

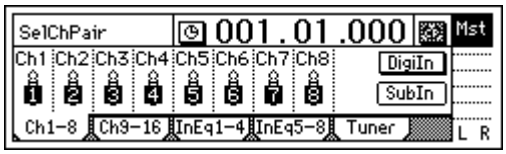
3. Using the sub inputs

You can use any of the analog inputs ([INPUT 1]–[INPUT 8/GUITAR IN]) as a sub input to send the audio directly to the master bus.

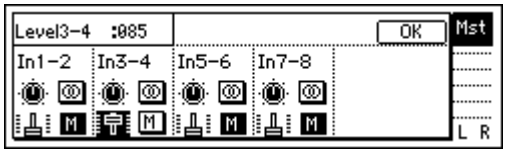
- If you have synchronized a sequencer to the completed song, you can use this to input the sequenced sounds via the sub inputs.
- You can use this to add the return audio from an external effect processor connected to the [AUX OUT] jack.

① **Connect the external audio source to the analog inputs.**
Input the external source to [INPUT 1]–[INPUT 8/GUITAR IN].

② **Make sub input settings.**
- Select the [INPUT] "Ch1–8" or "Ch9–16" tab page.



- Press the "SubIn" button to access the sub input setting screen.



- Turn the "M (mute)" button "**Off**" for the connected input.
- Select the "Fader" icon and rotate the [VALUE] dial to raise the value so that the audio signal will be input.
- If the input is mono, press the "Stereo/Mono" button to select "**Mono**" so that the audio will be sent to both L and R buses.

Step 10. Track editing

1. Track editing functions

The following functions are provided for track editing.
Copy Track: copy a track
Insert Track: insert a blank space
Erase Track: erase a track
Delete Track: delete a track
Reverse Track: reverses track audio end-to-end
Optimize Track: optimizes track data
Swap Track: exchange tracks
Expansion/Compression Track: expand or compress a track
Copy Whole Track: copy an entire track
Swap Whole Track: exchange entire tracks
Fade Track: fade-in/fade-out
Normalize Track: optimize the level

In some cases, track editing functions may not be usable if you have insufficient hard disk space. You must allocate sufficient free space (equivalent to the IN–OUT or TO–END time) for the track editing operation.

Basic track editing procedure

① **Specify the region (time) that will be edited.**
- In order to edit a track, you must first specify the region (area of time) that will be edited.
- Move to the location that you wish to register.
- Press the [STORE] key, and then press one of the following keys to register the corresponding location.
  [IN/LOC1] key: IN time
  [OUT/LOC2] key: OUT time
  [TO/LOC3] key: TO time
  [END/LOC4] key: END time

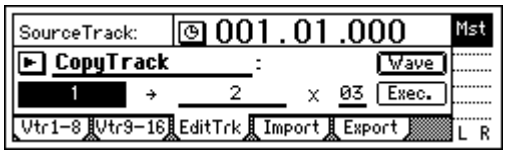
The IN, OUT, TO, and END times are used as follows by each editing command.

How the editing commands use the IN, OUT, TO, and END times

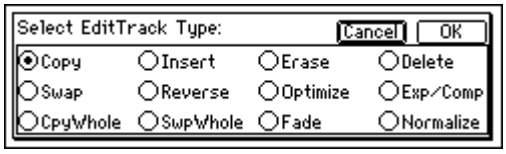
	IN	OUT	TO	END
Copy Track	Copy source start time	Copy source end time	Copy destination start time	– – –
Insert Track	Blank insert start time	Blank insert end time	– – –	– – –
Erase Track	Erase start time	Erase end time	– – –	– – –
Delete Track	Delete start time	Delete end time	– – –	– – –
Swap Track	Swap start time	Swap end time	– – –	– – –
Reverse Track	Reverse start time	Reverse end time	Reversed copy destination start time	– – –
Optimize Track	Optimize start time	Optimize end time	– – –	– – –
Expansion/ Compression Track	Expand/compress start time	Expand/compress end time	Expand/compress destination start time and expand/compress result copy destination start time	Expand/compress destination end time
Fade Track	Fade start time	Fade end time	– – –	– – –
Normalize Track	Normalize start time	Normalize end time	– – –	– – –

note Depending on the "EditType," the "Wave" button may appear, allowing you to view the waveform as you specify the location more precisely. (→p.82)

② **Access the [TRACK] "EditTrk" tab page.**

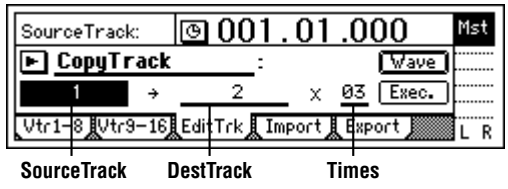


③ **Select the type of operation that you wish to execute (copy, insert blank, etc.).**
Select "EditType." Select the area to the right of the "▶" button, and rotate the [VALUE] dial to select the desired editing operation.
Alternatively, you can press the "▶" button to display "Select EditTrack Type," and select the type of editing.



④ **Select the track(s) that you wish to edit.**
The LCD screen will differ depending on the "EditType." The screen shown in step ② is when "EditType" is set to "CopyTrack."
For "CopyTrack," use "SourceTrack" to specify the copy source track, "DestTrack" to specify the copy destination track, and "Times" to specify the number of copies.

note You can use "Wave" to view the waveform as you specify the editing region.



⑤ **Execute the selected track editing command.**
Press the "Exec." button to execute the selected track editing command.
In the example shown in step ④, the data in the IN–OUT region of track 1 will be copied three times starting at the TO location of track 2.

2. Track editing examples

Copying track data: Copy Track

The Copy Track command copies recorded track data from the specified region (IN–OUT) to another location (TO).

- You can copy the IN–OUT data not only once, but multiple times in succession.
- You can copy not only a single track, but multiple tracks simultaneously.
- By using the clipboard, you can copy track data to another song.

This command can be used in the following ways.

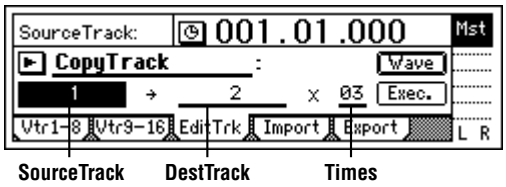
- A phrase of several measures (such as a drum pattern) can be copied repeatedly to create track data for the entire song.
- The first verse of a song can be copied, and used to create the second verse.
- A favorite phrase can be recorded on a track, and copied for use on another track or song.

Procedure for copying a track within the same song

Here's how to copy the IN–OUT region of track 1 to the TO location of track 2 three times.

① **Register the IN, OUT, and TO times. (→p.97)**

② **Select the Copy command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyTrack."



③ **Select the copy source track number.**
Set "SourceTrack" to track 1.

④ **Select the copy destination track number.**
Set "DestTrack" to track 2.

note If you specify multiple tracks for the copy source, you must specify the same number of tracks for the copy destination.

⑤ **Specify the number of times that the data will be copied.**
Set "Times" to 3.

⑥ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

The data will be overwritten onto the copy destination track.

⑦ **Verify the results.**
Press the [TO/LOC3] key to play back from the TO location, and verify that the copy was performed correctly .

note You can use Undo to return to the state before executing the command. (→p.99)

Procedure for copying to a track in a different song

Here's how to copy the IN–OUT region of song 001 track 1 to the TO location of song 002 track 2, once.

① **Select song 001.**

② **Register the IN and OUT times. (→p.97)**

③ **Select the Copy command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyTrack."

④ **Select the copy source track number.**
Set "SourceTrack" to track 1.

⑤ **Select the clipboard as the copy destination track number.**
Set "DestTrack" to "Clip."

⑥ **Execute the copy command.**
Refer to step ⑥ of "Procedure for copying a track within the same song."

The data in the clipboard will be overwritten.

⑦ **Select song 002.**

⑧ **Register the TO time location. (→p.97)**

⑨ **Select the Copy command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyTrack."

⑩ **Select the clipboard as the copy source track number.**
Set "SourceTrack" to "Clip 1." The number indicates the number of tracks in the clipboard.

⑪ **Select the copy destination track num.**
Set "DestTrack" to track 2.

⑫ **Specify the number of times that the data will be copied.**
Set "Times" to 1.

⑬ **Execute the copy.**
Refer to step ⑥ of "Procedure for copying a track within the same song."

The data will be overwritten onto the copy destination track.

⑭ **Verify that the data was copied correctly.**
Press the [TO/LOC3] key to play back from the TO location, and verify that the copy was performed correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

If you are using an external drive, the data in the clipboard will be erased when you switch drives.

Inserting blank data: Insert Track

The Insert Track command inserts blank space into the specified region (IN–OUT) of the recorded track. Track data located after the inserted blank will be moved toward the end of the song.

- You can insert a blank into not only a single track, but into multiple tracks simultaneously.

This command can be used in ways such as the following.

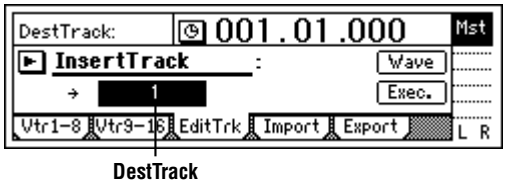
- This command can be used to add a phrase in the middle of previously-recorded data, by inserting blank space and recording your new data.

Inserting a blank (Insert)

Here's how to insert a blank space into the IN–OUT region of track 1.

① **Register the IN and OUT times. (→p.97)**

② **Select the Insert command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "InsertTrack."



③ **Select the number of the track onto which you wish to make an insert.**
Set "DestTrack" to track 1.

④ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑤ **Verify the results.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the blank data was inserted correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Erasing data from a track: Erase Track

The Erase Track command erases the specified region (IN–OUT) of recorded track data. When data is erased, a blank space will be created in that region.

note Unlike the Delete Track command, the data that followed the OUT location will not be moved forward.

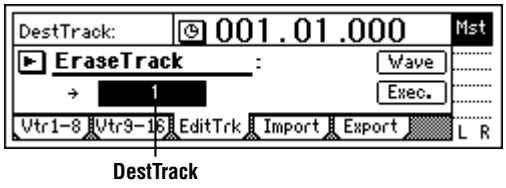
- You can erase data from not only one track, but from the IN–OUT region of multiple tracks simultaneously.

Procedure for erasing track data (Erase)

Here's how to erase the IN–OUT region of track 1.

① **Register the IN and OUT times. (→p.97)**

② **Select the Erase command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "EraseTrack."



③ **Select the number of the track from which you wish to erase data.**
Set "DestTrack" to track 1.

④ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑤ **Verify the results.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was erased correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Deleting track data: Delete Track

The Delete Track command deletes data from the specified region (IN–OUT) of recorded track data. When data is deleted, the data that followed (i.e., the data after the OUT location) will be moved toward the beginning of the song.

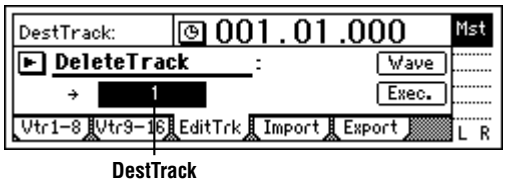
- You can delete data from not only one track, but from the IN–OUT region of multiple tracks simultaneously.

Procedure for deleting track data (Delete)

Here's how to delete the IN–OUT region of track 1.

① **Register the IN and OUT times. (→p.97)**

② **Select the Delete command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "DeleteTrack."



③ **Select the number of the track from which you wish to delete data.**
Set "DestTrack" to track 1.

④ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑤ **Verify the results.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was deleted correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Reversing track data: Reverse Track

The Reverse Track command copies a reversed version of the specified region (IN–OUT) of recorded track data to the TO location of another track.

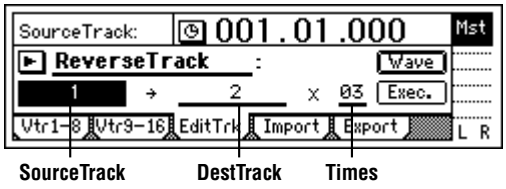
- The IN–OUT region can be copied not just once, but multiple times in succession.
- Data can be copied not only from one track, but from multiple tracks simultaneously.

Procedure for reversing track data (Reverse)

Here's how to reverse the IN–OUT region of track 1, and copy it three times to the TO location of track 2.

① **Register the IN, OUT, and TO times. (→p.97)**

② **Select the Reverse command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "ReverseTrack."



③ **Select the reverse source track number.**
Set "SourceTrack" to track 1.

④ **Select the reverse destination track number.**
Set "DestTrack" to track 2.

⑤ **Specify the number of times the data will be copied.**
Set "Times" to 3.

⑥ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑦ **Verify the results.**
Press the [TO/LOC3] key to play back from the TO location, and verify that the data was edited correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Optimizing track data: Optimize Track

This command optimizes the specified region (IN–OUT) of recorded track data.

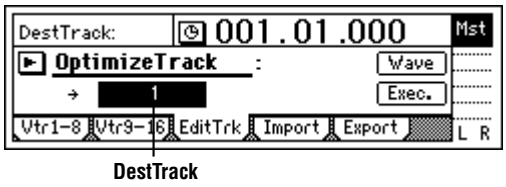
If recording or editing has been performed repeatedly in short lengths of time so that the data has become fragmented, the disk will have to be accessed more frequently, which may cause skips in the sound or indications of "DiskBusy" and failure to play back. If this occurs, you can optimize the area of fragmented data so that playback can occur normally.

Procedure for optimizing track data (Optimize)

Here's how to optimize the IN–OUT region of track 1.

① **Register the IN and OUT times.**
Register the IN location slightly earlier than the point where the "DiskBusy" indications begin to appear, and register the OUT location at the point where these indications stop appearing. (→p.97)

② **Select the Optimize command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "OptimizeTrack."



③ **Select the number of the track that you wish to optimize.**
Find the track whose data you believe is fragmented (in this example we will use track 1), and set "DestTrack" to track 1.

④ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑤ **Verify the results.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the playback is correct, without any indications of "Disk Busy."

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Swapping track data: Swap Track

This command exchanges (swaps) the specified region (IN–OUT) of recorded track data with the same region of another track.

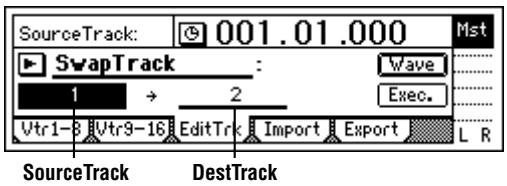
- Data can be swapped not only between single tracks, but also between multiple tracks simultaneously.

Procedure for swapping track data (Swap)

Here's how to exchange the IN–OUT regions of track 1 and track 2.

① **Register the IN and OUT times. (→p.97)**

② **Select the Swap command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "SwapTrack."



③ **Select the swap source track number.**
Set "SourceTrack" to track 1.

④ **Select the swap destination track number.**
Set "DestTrack" to track 2.

⑤ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify that the data was exchanged correctly.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was exchanged correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Expanding or compressing a track: Expansion/Compression Track

This command expands or compresses the specified region (IN–OUT) of recorded track data into the specified region (TO–END) of a specified track.

- The original data is left unchanged, and the time-expanded/compressed result is created on another track.
- You can select whether or not the pitch will be converted.
- Not only a single track, but multiple adjacent tracks of data can be converted simultaneously.
- The converted data can be copied multiple times in succession.

This command can be used in ways such as the following.

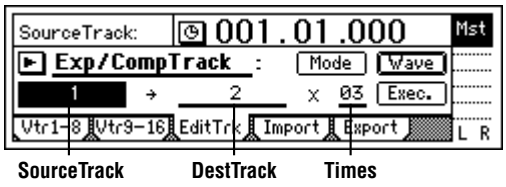
- Drum loops of different tempo can be changed to the same tempo.
- Phrases can be made to fit into a specific time length.

Procedure for expanding (Expansion) or compressing (Compression) track data and copying it

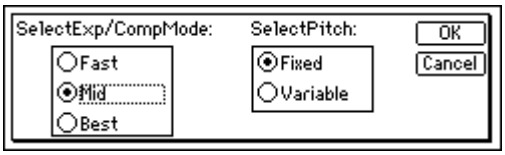
Here's how the IN–OUT range of track 1 can be converted to the length of the TO–END range of track 2, and copied there three times.

① **Register the IN, OUT, TO, and END times. (→p.97)**

② **Select the expansion/compression command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "Exp/CompTrack."



③ **Select the expansion/compression mode.**
Press the "Mode" button to access the dialog box.



For this example, select "Fast" and "Fixed." Then press the "OK" button to return to the [TRACK] "EditTrk" tab page. (→p.84)

④ **Select the expansion/compression source track number.**
Set "SourceTrack" to track 1.

⑤ **Select the expansion/compression destination track number.**
Set "DestTrack" to track 2.

⑥ **Specify the number of times that the data will be copied.**
Set "Times" to 3.

⑦ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑧ **Verify that the data was processed correctly.**
Press the [TO/LOC3] key to play back from the TO location, and verify that the data was expanded/compressed correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Copying an entire track/Copying to a V-track: Copy Whole Track

This command copies an entire recorded track (from beginning to end) to a different entire track.

- You can copy not only one track, but multiple tracks simultaneously.
- The currently selected virtual track can be copied to multiple virtual tracks.

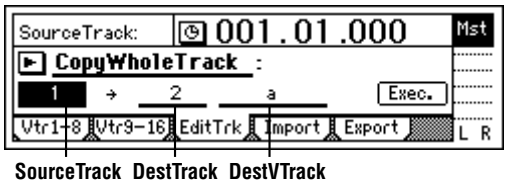
This command can be used in ways such as the following.

- The same track can be copied to multiple virtual tracks, and used to create multiple takes that are partially different.

Procedure for copying an entire track

Here's how track 1 can be copied to V-track "a" (=currently selected) of track 2.

① **Select the Copy Whole command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyWholeTrack."



② **Select the copy source track number.**
Set "SourceTrack" to track 1.

③ **Select the copy destination track number.**
Set "DestTrack" to track 2.

④ **Select the copy destination V-track.**
Set "DestVTrack" to V-track "a."

⑤ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify that the data was copied correctly.**
Play back from the beginning of the song, and verify that the data was copied correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Procedure for copying to a V-track

Here's how V-track "a" (=currently selected) of track 1 can be copied to V-track "b" of track 1.

① **Verify the copy destination.**
In the [TRACK] "Vtr1–8" tab page, make sure that track 1 V-track "b" is blank or is a track that may be erased (overwritten). After you verify this, you must return the setting to "a." (→p.81)

② **Select the Copy Whole command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyWholeTrack."

③ **Select the copy source track number.**
Set "SourceTrack" to track 1.

④ **Select the copy destination track number.**
Set "DestTrack" to track 1.

⑤ **Select the copy destination V-track.**
Set "DestVTrack" to V-track "b."

⑥ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑦ **In the [TRACK] "Vtr1–8" tab page, select V-track "b" for track 1.**

⑧ **Verify that the data was copied correctly.**
Play back from the beginning of the song, and verify that the data was copied correctly.

note You can use Undo to return to the state before executing the command. (→p.99)
In this case, you must return track 1 to V-track "a."

Exchanging entire tracks/V-tracks: Swap Whole Track

This command exchanges (swaps) the data of an entire recorded track (from beginning to end) with the data of another entire track.

- Not only individual tracks, but multiple tracks can be swapped simultaneously.

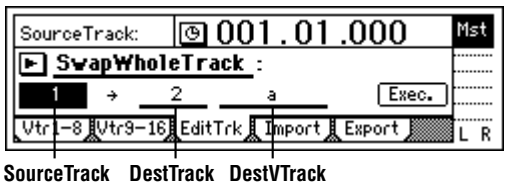
This command can be used in ways such as the following.

- Recorded tracks can have their numbers re-ordered by type.
- Data that is scattered across different V-tracks can be rearranged into V-track "a" etc.

Procedure for exchanging an entire track

Here's how track 1 can be exchanged with the currently selected V-track "a" of track 2.

① **Select the Swap Whole command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "SwapWholeTrack."



② **Select the swap source track number.**
Set "SourceTrack" to track 1.

③ **Select the swap destination track number.**
Set "DestTrack" to track 2.

④ **Select the swap destination V-track.**
Set "DestVTrack" to V-track "a."

⑤ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify that the data was exchanged correctly.**
Play back from the beginning of the song, and verify that the data was exchanged correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

Procedure for exchanging with a V-track

Here's how currently selected V-track "a" of track 1 can be exchanged with V-track "b" of track 1.

① **Verify the copy destination.**
In the [TRACK] "Vtr1–8" tab page, make sure that track 1 V-track "b" is the track that you wish to exchange. After you verify this, you must return the setting to "a." (→p.81)

② **Select the Swap Whole command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "SwapWholeTrack."

③ **Select the swap source track number.**
Set "SourceTrack" to track 1.

④ **Select the swap destination track number.**
Set "DestTrack" to track 1.

⑤ **Select the swap destination V-track.**
Set "DestVTrack" to V-track "b."

⑥ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑦ **In the [TRACK] "Vtr1–8" tab page, select V-track "b" for track 1.**

⑧ **Verify that the data was exchanged correctly.**
Play back from the beginning of the song, and verify that the data was exchanged correctly.

note You can use Undo to return to the state before executing the command. (→p.99)
In this case, you must return track 1 to V-track "a."

Fading-in/fading-out: Fade Track

This command fades-in or fades-out the specified region (IN–OUT) of recorded track data. By using fade-in and fade-out in conjunction with each other, you can create cross-fades.

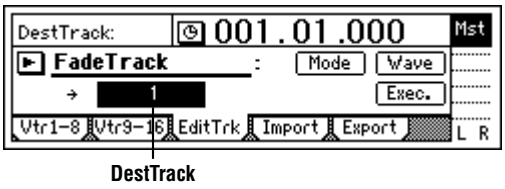
- You can fade-in or fade-out the IN–OUT region.
- Not only a single track, but multiple tracks of data can be faded in or out simultaneously.

Procedure for fading-in

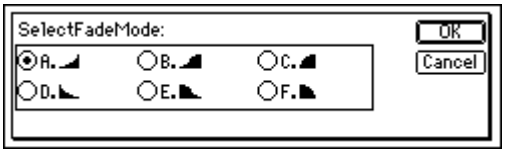
Here's how to fade-in the IN–OUT region of track 1.

① **Register the IN and OUT times.**
Register the start and end times of the desired fade-in. (→p.97)

② **Select the fade-in command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "FadeTrack."



③ **Select the fade-in curve.**
Press the "Mode" button to access the dialog box.



For this example, select the "A" curve, press the "OK" button to return to the [TRACK] "EditTrk" tab page.

④ **Select the fade-in destination track number.**
Set "DestTrack" to track 1.

⑤ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify that the data was faded correctly.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was faded-in correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Procedure for fading-out

Here's how to fade-out the IN–OUT region of track 1.

① **Register the IN and OUT times.**
Register the start and end times of the desired fade-out. (→p.97)

② **Select the fade-out command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "FadeTrack."

③ **Select the fade-out curve.**
Press the "Mode" button to access the dialog box. For this example, select the "D" curve, press the "OK" button to return to the [TRACK] "EditTrk" tab page.

④ **Select the fade-out destination track number.**
Set "DestTrack" to track 1.

⑤ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify that the data was faded correctly.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was faded-out correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Boosting to the optimal level: Normalize Track

This command boosts the specified region (IN–OUT) of track data that was recorded at a lower than optimal level, so that the level is raised to the maximum volume without clipping.

- The peak of the audio data in the IN–OUT region is detected, and the audio level of the IN–OUT region is boosted so that the peak reaches the maximum allowable level.
- You can normalize either a single track, or adjacent tracks simultaneously.

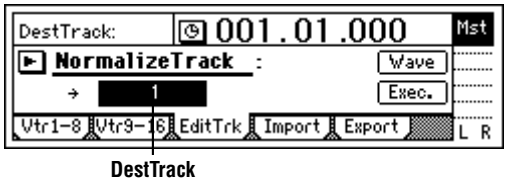
If data recorded at an extremely low level is normalized, any noise included in that region will also be boosted.

Procedure for normalizing

Here's how to normalize the IN–OUT region of track 1.

① **Register the IN and OUT times.**
Register the start and end times of the region you wish to normalize. (→p.97)

② **Select the normalize command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "NormalizeTrack."



③ **Select the normalize destination track number.**
Set "DestTrack" to track 1.

④ **Execute the editing command.**
Press the "Exec." button. The display will ask "AreYouSure?," so press the "Yes" button to execute the command.
When processing is completed, the display will indicate "Completed." Press the "OK" button.

⑤ **Verify that the data was processed correctly.**
Press the [IN/LOC1] key to play back from the IN location, and verify that the data was normalized correctly.

note You can use Undo to return to the state before executing the command. (→p.99)

The longer the specified range (IN–OUT), the longer this command will take to process until the "Completed" display appears.

Step 11. Song editing

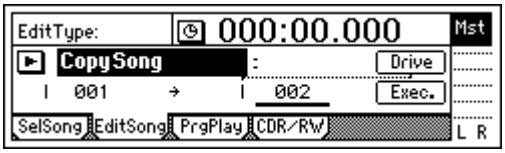
On the D1600, songs can be edited in the following ways.

1. Song editing procedure

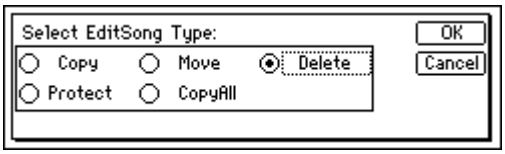
Basic procedure for editing a song

① **Select the song (or in the case of "CopyAllSongs", the drive) that you wish to edit.**

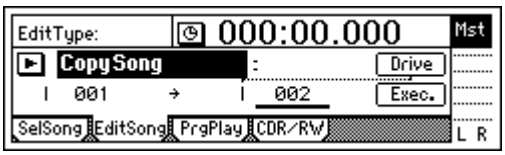
② **Access the [SONG] "EditSong" tab page.**



③ **Select the disk drive type of editing operation, such as Copy or Delete.**
Select the "EditType." Press the field at the right of the "▶" button, and rotate the [VALUE] dial to specify the desired type of editing operation. Alternatively, you can press the "▶" button to display "Select Edit Song Type," and select the desired type of editing operation.



④ **Select the song that you wish to edit.**
The LCD display will differ for each "EditType." The screen shown in step ② is what will appear when "EditType" is set to "CopySong."
In the case of the "CopySong" operation, the copy source song you selected in ① will be displayed in "Source Song." Use "Drive" to specify the copy destination drive, and "DestSong" to specify the copy destination song.



⑤ **Execute the specified song editing operation.**
Press the "Exec." button to execute the specified song editing operation.
In the example of the screen shot printed above, song 1 of the internal hard disk will be copied to song 2. The previous song 2 and subsequent songs will be renumbered upward.

Undo is not available for song editing.

2. Examples of song editing

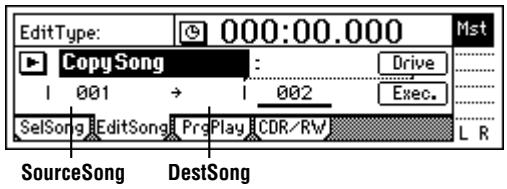
Copying a song

This command copies the currently selected song to a song number on the specified drive.

- You can use this to save a backup of your song on a different hard drive.
- You can use this when creating different mixes or arrangements of the same song.

① **Select the copy source song ("SourceSong"). (→p.22)**

② **Select the Copy Song command.**
In the [SONG] "EditSong" tab page, set "EditType" to "CopySong."



③ **Verify the song to be copied.**
Make sure that the copy source song is selected in "SourceSong."

④ **Select the copy destination drive.**
Press the "Drive" button. In the dialog box, select the copy destination drive. Then press the "OK" button.

⑤ **Select the copy destination song number.**
Use "DestSong" to select the copy destination song number.

⑥ **Execute the editing operation.**
Press the "Exec." button. In response to the "AreYouSure?" display, press the "Yes" button to execute the operation.
When the operation is completed, the display will indicate "Completed." Press the "OK" button.

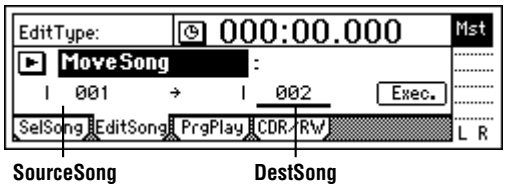
Moving a song

This command moves the currently selected song to another song number in the same drive.

- You can use this to change the order of songs.

① **Select the song that you wish to move ("SourceSong"). (→p.22)**

② **Select the Move Song command.**
In the [SONG] "EditSong" tab page, set "EditType" to "MoveSong."



③ **Verify the song to be moved.**
Make sure that the move source song is selected in "SourceSong."

④ **Select the move destination song number.**
Use "DestSong" to select the move destination song number.

⑤ **Execute the editing operation.**
Press the "Exec." button. In response to the "AreYouSure?" display, press the "Yes" button to execute the operation.
When the operation is completed, the display will indicate "Completed." Press the "OK" button.

Deleting a song

This command deletes the selected song.

① **Select the song that you wish to delete ("DestSong"). (→p.22)**

② **Select the Delete Song command.**
In the [SONG] "EditSong" tab page, set "EditType" to "DeleteSong."

③ **Verify the song to be deleted.**
Make sure that the song that you wish to delete is selected in "DestSong."

④ **Execute the editing operation.**
Press the "Exec." button. In response to the "AreYouSure?" display, press the "Yes" button to execute the operation.
When the operation is completed, the display will indicate "Completed." Press the "OK" button.

Protecting a song

This command protects the currently selected song so that it cannot be written or deleted.

If the protect setting is turned on for a song, an error message will appear if you attempt to record that song. It will not be possible to modify any of the parameters of that song.

- Use this command to avoid accidentally modifying a completed song.

① **Select the song that you wish to protect ("DestSong"). (→p.22)**

② **Select the Protect Song command.**
In the [SONG] "EditSong" tab page, set "EditType" to "ProtectSong."

③ **Make sure that the song that you wish to protect is selected in "DestSong."**

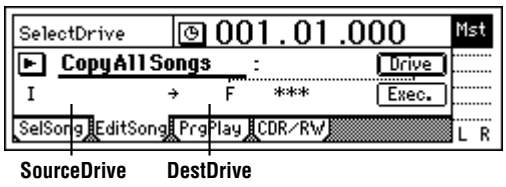
④ **Turn protect on/off.**
Press the "Exec." button. The protect "On" setting is indicated by a lock icon. To turn the setting on/off, press the "Exec." button.

Copying all songs in a drive

This command copies all songs of the drive that contains the currently selected song.

① **Select the copy source drive. (→p.22)**

② **Select the Copy All Songs command.**
In the [SONG] "EditSong" tab page, set "EditType" to "CopyAllSongs."



③ **Verify the copy source drive.**
Make sure that the copy source drive number is selected in "SourceDrive."

④ **Select the copy destination drive.**
Press the "Drive" button, and select the copy destination drive in the dialog box. Then press the "OK" button.

⑤ **Execute the editing operation.**
Press the "Exec." button. In response to the "AreYouSure?" display, press the "Yes" button to execute the operation.
When the operation is completed, the display will indicate "Completed." Press the "OK" button.

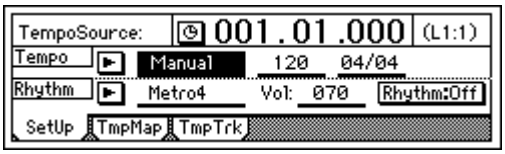
Step 12. Rhythm/tempo settings

The D1600 contains numerous rhythm patterns for a variety of time signatures (→p.146 "Rhythm Pattern List").

When you have a sudden idea for a song, you can record your performance immediately, using the built-in rhythms as a guide.
By joining various rhythm patterns, you can also create drum patterns for an entire song.

1. Specifying and playing a rhythm

○ **Access the [TEMPO/RHYTHM] "SetUp" tab page.**
The settings described below are made in this page.



Turning the rhythm on/off

○ **Press the "Rhythm" button to turn it "On" (highlighted).**
The [TEMPO/RHYTHM] button will light, and the rhythm will sound during playback or recording.
If you do not want to hear the rhythm during playback or recording, turn the "Rhythm" button "**Off**."

Adjusting the rhythm volume

○ **Select the "RhythmVol (Vol)," and rotate the [VALUE] dial to adjust the volume.**

Setting the tempo and time signature

① **Select the "TempoSource," and select the tempo source.**
For this example, we will select "**Manual**" which will use a single tempo, time signature, and rhythm pattern.

note You can also press the "▶" button, and select from a list.

If you wish to change the tempo, time signature, and rhythm pattern during the song, you must create a Tempo Map. (→p.62)

② **Select the"Tempo," and rotate the [VALUE] dial to adjust the tempo.**

③ **Select the "Beat," and rotate the [VALUE] dial to set the time signature.**

Selecting the rhythm pattern

○ **Select "SelRhythm," and rotate the [VALUE] dial to select the rhythm pattern that you wish to use.**

note You can also press the "▶" button, and select from a list.

2. Recording your performance while you listen to the rhythm

You can record your performance while listening to the built-in rhythm as a guide.

① **Make settings as described in "1. Specifying and playing a rhythm."**
- Turn "Rhythm" "On."
- Make other settings as necessary.

② **Connect your input device, and begin recording.**
Refer to "1. Analog inputs" and "1. Adjust the recording level, and record" (→p.23, 27).
When you press the [REC] key to enter record-ready mode, the rhythm will begin sounding. Recording will begin when you press the [PLAY] key. You will hear the selected rhythm pattern. Begin performing, using the rhythm as a guide.

3. Recording the rhythm

Built-in rhythm patterns can be recorded on a track.

As an example, here's how the rhythm pattern can be recorded on mixer channels 1 and 2.

① **Make settings as described in "1. Specifying and playing a rhythm."**
- Turn "Rhythm" "**Off**."

note If this is turned **on**, the sound will be output in duplicate to the track and also to the master LR bus.)

- To set the volume, use the mixer channel that you are inputting. Since "RhythmVol (Vol)" adjusts the send volume to the master LR bus, you do not need to set it.
- Make other settings as necessary.

② **Specify the input channels.**
- Select the [INPUT] "Ch1–8" tab page.
- Select the "Ch1" icon, and rotate the [VALUE] dial to select "**Rhythm L**." In the same way, set "Ch2" to "**Rhythm R**."

③ **Check the record mode.**
- Select the [RECORD] "RecMode" tab page.
- Select "**Input**" (= record the input).

④ **Specify the recording tracks.**
Press [TRACK STATUS] keys for tracks 1 and 2 to set them to **REC** (LED lit red).

⑤ **Adjust the recording level, and record.**
Use the [CHANNEL] faders of tracks 1 and 2 to adjust the level appropriately.

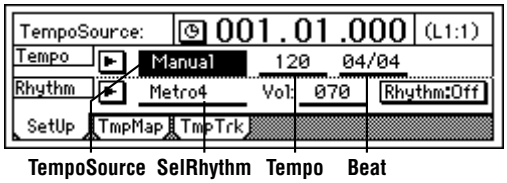
4. Setting the tempo

The tempo of a song can be controlled by the following tempo sources.

- Manual tempo
- Tempo map
- Tempo track (MIDI clock or tap tempo)

You can select one of these sources and use it to control the tempo of the song as well as to control the tempo of an external MIDI device that is synchronized to the D1600.

○ **The tempo source is selected by the [TEMPO/RHYTHM] "SetUp" tab page item "Tempo-Source."**



Here's how you can make settings for each tempo source.

Manual tempo

Manual tempo follows the tempo settings of "Tempo," the time signature of "Beat," and the rhythm pattern of "SelRhythm." The tempo etc. will not change during the song.

○ **Set the tempo source to Manual.**

- Select the [TEMPO/RHYTHM] "SetUp" tab page.
- Select the "TempoSource," and rotate the [VALUE] dial to select "**Manual**."
  For details on setting "Tempo," "Beat," and "SelRhythm," refer to "1. Specifying and playing a rhythm" (→p.61).

Tempo map

Tempo maps let you specify the tempo, time signature, and rhythm pattern for each measure. The tempo, time signature, and rhythm pattern will change at the specified measure locations.

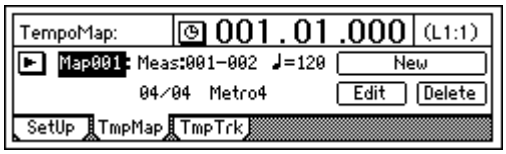
① **Set the Tempo Map as the tempo source.**

- Access the [TEMPO/RHYTHM] "SetUp" tab page.
- Select the "TempoSource," and rotate the [VALUE] dial to select "**TempoMap**."

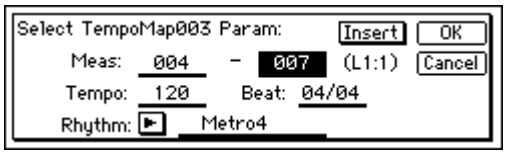
② **Set tempo map "001" to specify the initial tempo at the beginning of the song.**

note There are two types of tempo map: tempo map "**001**" sets the initial tempo at the beginning of the song, and tempo maps "002"–"200" modify the tempo in subsequent measures.

- Access the [TEMPO/RHYTHM] "TmpMap" tab page.



- Select the "TempoMap," and rotate the [VALUE] dial to select tempo map "**001**."
- Select the "Edit" button to access the "Select TempoMap001 Param" dialog box.



- Select the tempo in "Tempo," the time signature in "Beat," and the rhythm pattern in "Rhythm." It is not possible to change the starting location (Start Measure) of tempo map "**001**."
  Only the ending location (End Measure) can be changed.
- When you have finished making settings, press the "OK" button.

③ **Add tempo maps as desired to change the tempo, time signature, or rhythm pattern as the song progresses.**

- Press the "New" button so that the display reads "Select TempoMap002 Param."
- Set "Meas" to the first measure (Start Measure) and last measure (End Measure) for which the new tempo map will be created. Set the tempo in "Tempo," the time signature in "Beat," and the rhythm pattern in "Rhythm." So that this tempo map will be added by overwriting, turn the "Insert" button "**Off**."
- Press the "OK" button to add the tempo map. The map numbers will automatically be renumbered from front to back.

note By adding tempo maps and using "Rhythm" to change the rhythm pattern, you can create drum patterns for an entire song, including an intro, fill-in, and ending.

Deleting/modifying a tempo map

You can delete an unwanted tempo map, or modify the measure location or tempo etc. of a tempo map.

① **Select the tempo map that you wish to delete or modify.**

- Access the [TEMPO/RHYTHM] "TmpMap" tab page.
- Select "TempoMap," and rotate the [VALUE] dial to select the appropriate tempo map.

② **Delete or modify the tempo map.**

- To **delete**, press the "Delete" button. A message of "AreYouSure?" will ask you to confirm.

Press the "OK" button, and the tempo map you selected in step ① will be deleted. If you turn the "SelectAll" button "**On**" (highlighted), all tempo maps other than "**001**" will be deleted.

Undo is not available for this operation.

- To **modify the settings**, press the "Edit" button to access the dialog box. Modify the parameter settings as desired.

Tempo track

The tempo track records MIDI clock data from an external device such as a MIDI sequencer, or records tap tempo.

Recording MIDI clock data from an external MIDI sequencer, and using it as the tempo track

Here's how MIDI clock tempo data from an external MIDI sequencer can be recorded on the tempo track. Use this when you wish to synchronize the D1600 song with song data created on a MIDI sequencer in which the tempo changes continuously.

① **Specify the time signature of the song.**
If the time signature of the MIDI sequencer song data changes during the song, you should create tempo maps at the locations where the time signature changes. (→"Tempo map")

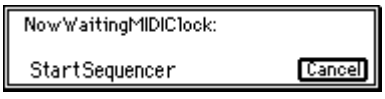
If the time signature changes during the song, it will be detected as an incorrect tempo unless you have created a tempo map that matches the changes in time signature. There is no need to specify the tempo.

② **Connect the MIDI OUT of your MIDI sequencer to the [MIDI IN] connector of the D1600.**

③ **Make settings on your MIDI sequencer so that it will transmit MIDI clock messages.**
Refer to the owner's manual for your MIDI sequencer.

④ **Specify how tempo will be recorded.**
In the [TEMPO/RHYTHM] "TmpTrk" tab page, select "**MIDI Clock**."

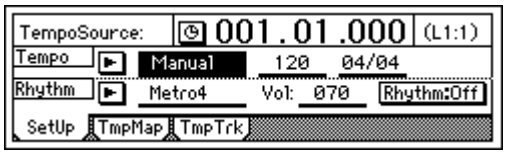
⑤ **Record the MIDI clock data.**
- Press the "RecStart" button to put the D1600 in record-ready mode.



- Start your MIDI sequencer.
- When MIDI clock messages are received from the MIDI sequencer, the display will indicate "ReceivingMIDIClock."

⑥ **When the MIDI sequencer finishes playing back, stop the MIDI sequencer.**
The D1600 will stop recording, and will display "Complete." Press the "OK" button.

⑦ **Select the tempo track as the tempo source.**
- Select the [TEMPO/RHYTHM] "SetUp" tab page.



- Select "TempoSource," and rotate the [VALUE] dial to select "**TempoTrk**."

If MIDI clock messages cannot be received correctly from the MIDI sequencer, tempo recording may end prematurely.

Tap tempo

While playing back a song, you can press (tap) the [PLAY] key at the beginning of each measure or beat to record a tempo. Alternatively, you can use a foot switch (separately sold option) instead of the [PLAY] key. Tap tempo can be used to record the tempo after you have recorded a song. By recording the tempo afterward for a song that contains no tempo settings, you can do the following things.

- Edit tracks in units of a measure
- Synchronize external MIDI devices

① **Prepare the audio for which you wish to record the tempo.**
First, the audio for which you wish to record tempo data must be recorded from the beginning of the song.

note Trigger recording is a convenient way to record from the beginning of the song. (→p.31)

② **Specify the time signature of the song.**
If the song whose tempo you wish to record has a time signature that changes during the song, you must create a tempo map at each location where the time signature changes. (→"Tempo map")

If the time signature changes during the song, it will be detected as an incorrect tempo unless you have created tempo maps that match the changes in time signature. There is no need to specify the tempo.

③ **If you wish to use a foot switch to input the tap tempo, connect a foot switch such as the PS-1 (separately sold option) to the [FOOT SW] jack of the D1600.**

④ **Select the tempo recording method.**
In the [TEMPO/RHYTHM] "TmpTrk" tab page, select either "**MeasTap**" (tap at the beginning of each measure), or "**BeatTap**" (tap at the beginning of each beat).

⑤ **Record the tap tempo.**

- Press the "RecStart" button to put the D1600 in record-ready mode.
- Press either the [PLAY] key or the foot switch, and playback and recording will begin simultaneously.
- While listening to the playback, press either the [PLAY] key or the foot switch at the intervals you selected in step ④, to record the tap tempo. A counter will be displayed while tempo is being recorded.

When pressing the [PLAY] key to record taps, do not strike the key with excessive force. Doing so may cause the hard disk or other components to malfunction.

⑥ **Stop recording.**

After entering the last tap, press the [STOP] key to end.

For example if you are recording four measures of 4/4 time, you would tap 4 times for "**MeasTap**" or 16 times for "**BeatTap**," and press the [STOP] key at the beginning of measure 5.

If you input taps only part-way through the song, the tempo of the last-input measure or beat will be automatically copied until the end of the song.

⑦ **Select the tempo track as the tempo source.**

- Access the [TEMPO/RHYTHM] "SetUp" tab page.
- Select "TempoSource," and rotate the [VALUE] dial to select "**TempoTrk**."

Step 13. Saving your data

A word about data

There is always a remote possibility that the D1600 will malfunction, causing errors in the data or loss of data. If the D1600 malfunctions, recorded data or other types of data may be lost. Please copy or back up your important data on an external drive such as a hard disk or removable disk.

Korg disclaims all responsibility for any damages that may result from loss of data.

The D1600 has an **Auto Save function** that automatically saves the song that you recorded or edited, together with its parameters, whenever you change songs or shut down the power. This means that there is no particular need for you to save your data manually. (You will need to save effect settings after editing an effect program.)

The save operations explained here assume that you wish to save the song to an external disk, for example in order to **save important data on an external disk**, or to transfer data from the internal hard disk to an external disk so that data can be deleted from the internal hard disk to free up more space.

When saving a song on an external disk, you can select from the following methods.

- Copy Song, Copy All Songs
- Backup 1 Song, Backup All Songs

Copy and Backup differ in the following ways.

Copy Song, Copy All Songs

- A copied song can be directly played back
- The songs in the save destination are not erased
- Song data exceeding the disk capacity cannot be saved
- Songs can be saved on hard disk or removable disk
- Initialization/formatting is necessary when using a disk for the first time
- Effect user data cannot be saved

Backup 1 Song, Backup All Songs

- A backed up song cannot be directly played back (the song must be restored before it can play back)
- All songs in the save destination are erased
- Song data exceeding the disk capacity can be backed up using multiple removable disks
- Songs can be saved only on removable disk
- Initialization/formatting is not necessary when using a disk for the first time
- Effect user data can be saved

note When saving a song on an external removable disk, refer to the above description to see whether you should select Copy or Backup. If the size of the song to be saved exceeds the capacity of the disk, you should select Backup. If you use Copy to save a song, and then subsequently modify and re-save the user effect settings that were used by that song, the modified effect settings will be used the next time you play the copied song, meaning that it will not sound the same. To avoid this situation, you should use Backup instead of Copy. Alternatively, you could use Copy, but backup the user effects separately by using the Backup User Data command.

1. Copy Song, Copy All Songs

You can use the "**CopySong**" command to copy the currently selected song, or the "**CopyAllSongs**" command to copy all songs of the currently selected drive.

For the copy procedure, refer to "**CopySong**" (→p.59) or "**CopyAllSongs**" (→p.60).

To **restore a song copied to an external disk back to the internal hard disk**, select the previously-copied song on the external disk as the copy source, select the song on the internal hard disk that you wish to copy, and execute "CopySong" or "CopyAllSongs" with the internal hard disk as the copy destination.

Undo is not available for these operations.

Before using a disk for the first time, you must initialize/format the disk. (→p.67)

2. Backup/Restore

Backup

You can use the "**Backup1Song**" command to back up the currently selected song, the "**BackupAllSongs**" command to back up all songs of the currently selected drive, or the "**BackupUserData**" command to back up the current user effect settings.
The user effect settings will always be backed up when you execute the "**Backup1Song**" command or the "**BackupAllSongs**" command.

Backup always overwrites the entire backup destination drive.

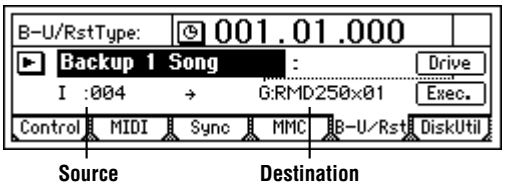
note It is not necessary to format the disk.

note If the amount of data to be backed up will not fit on a single disk, making it necessary to use multiple volumes of media, you must use media of the same type. Some removable media (Zip) can only be used for backup. Jaz, ORB, or fixed hard drives can be used for either recording or backup.

Backup procedure

① **Insert a disk into the backup destination drive.**

② **Select the backup source drive.**
Use the [SONG] "SelSong" tab page to select the backup source drive.
If you are using "**Backup1Song**," select a song in that drive. Select the song as described in "3. Selecting another song" (→p.22), and then use the [SYSTEM] "B–U/Rst" tab page "Source" to verify the backup source song number.



③ **Use "B–U/RstType" to select the backup type.**

④ **Select the backup destination drive ("Destination").**
Press the "Drive" button to access the dialog box. Select the drive, press the "OK" button.

⑤ **Prepare the disk(s).**
The "Backup1Song" and "BackupAllSongs" commands will indicate the number of disks required for the backup. Make sure that you have the required number of disks.

note When using multiple disks, we recommend that you number each disk beforehand.

⑥ **Execute the backup.**
Press the "Exec." button. The display will ask "AreYouSure?", so press the "Yes" button to execute the operation.

⑦ **Exchange disks as necessary.**
If multiple disks are necessary in step ⑤, a dialog box will ask you for the next disk when each disk fills up. Insert the next disk, press the "OK" button.

⑧ **When the operation is finished, the display will indicate "Completed." Press the "OK" button.**

Restore

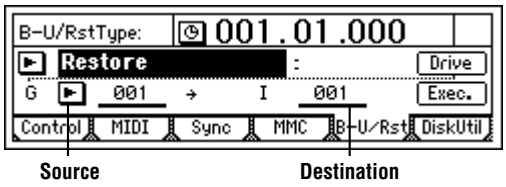
By using the Restore command, previously backed-up data can be recalled from a list so that it can be played and edited.

When restoring data of all songs ("**BackupAllSongs**") or one song ("**Backup1Song**"), you can select whether or not you wish to overwrite the current user effect data.
You can also restore a specific individual song from the songs that were backed up by "**BackupAllSongs**."

Restore procedure

① **Select the restore destination drive.**
Use the [SONG] "SelSong" tab page or the [SYSTEM] "DiskUtil" tab select the restore destination drive.

② **Select the Restore operation.**
In the [SYSTEM] "B–U/Rst" tab page, set "B–U/RstType" to "**Restore**."



③ **Insert the disk into the restore source drive.**

④ **Select the restore source drive ("Source").**
Press the "Drive" button to access the dialog box. Select the drive, press the "OK" button.

⑤ **Select the backup source song ("Source").**
In the case of a disk that was backed up using "**BackupAllSongs**," you can select whether to restore all songs or just a single song. Use "Source" to select the song that you wish to restore. To restore all songs, choose "SelectAll" in the dialog box.

⑥ **If you are restoring a single song, select the restore destination song ("Destination").**

⑦ **Execute the restore operation.**
Press the "Exec." button. In response to the "AreYouSure?" confirmation, press the "Yes" button to execute the operation.
If you are restoring from a backup that extended across multiple disks, you will be asked for the next disk when the data has been restored from the current disk. Insert the next disk, press the "OK" button.

⑧ **Specify whether the effect user data will be restored.**
After the song data has been restored, the "RestoreUserData" message will appear, asking you whether the current user data should be overwritten by the user data that was saved at the time of the backup. If you wish to overwrite the current data, press the "Yes" button. If not, press the "No" button.

If the current data is overwritten, it will be lost.

⑨ **When the operation is completed, the display will indicate "Completed." Press the "OK" button.**

Backup and restore using a CD-R/RW

The optional internal CD-RW drive or an external CD-R/CD-RW drive connected to the [SCSI] connector can be used to backup and restore D1600 song data.

3. Connecting external drives

Here's how to connect external drives such as hard disks, removable disks, or CD-R/RW drives.

- Maximum capacity of external drive: 1,000 Gbytes per drive
- Connector: HD SCSI-2 (50 pin) SCSI cable
- Number of units that can be connected: up to 7 units

Please use the recommended drives for external connection. For a list of recommended drives, please contact your Korg distributor.

① **Turn off the power of the D1600 and the external drive.**

You must turn off the power of the D1600 and the drive before connecting or disconnecting the SCSI cable or changing the SCSI ID number of the drive.

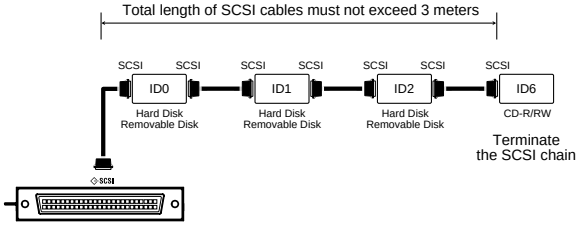
② **Set the SCSI ID of the external drive.**
For a **CD-ROM** or **CD-R/RW** drive, set the SCSI ID to **6** (displayed as "**G**").
For a **hard disk** or **removable disk**, select the lowest available number.
For details on setting the SCSI ID, refer to the owner's manual for your drive.
If you are connecting multiple external drives, be sure that their ID numbers do not conflict with each other.

If two or more drives are set to the same ID number, malfunctions or loss of data may result. Never allow the ID numbers to conflict.

③ **Connect the external drive to the [SCSI] connector of the D1600.**

Attach or enable a terminator at the end of the last external drive. If you are connecting more than one external drive, make sure that the total length of the connection cables does not exceed 3 meters. (For details on connections/installation, refer to the owner's manual for your external drive.)

If the access speed of the connected external drive is inadequate, the sound may "skip" or errors may occur. Please use external drives that have a sufficiently fast access speed.



Turning the power of an external drive on/off

When turning the **power on**, turn on the external drive(s) first, and then turn on the D1600.

When turning the **power off**, turn off the D1600 first, and then turn off the external drive(s).

Initializing and formatting a disk

Before you can use a disk to record or play back songs, you must initialize or format it.

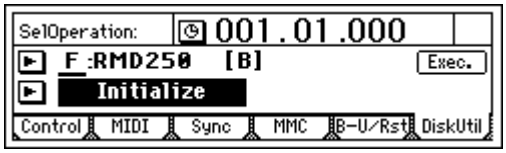
- **Initialize** must be performed before a newly-purchased drive can be used, or when you wish to erase the contents of a drive.
- **Format** should be performed when a disk was used by another device is to be used by the D1600, or when a disk begins to produce frequent "Disk Error" indications during playback.

When you execute Initialize or Format, all data on the disk will be erased. Be sure to verify the contents of the disk before you execute these operations.

If an accident such as power failure occurs while the internal drive is being initialized or formatted, the D1600 may become unable to operate correctly. If this occurs, please contact your Korg distributor.

If a 20 GB internal drive is used, formatting will take approximately 240 minutes. The time required to format an external drive will depend on the media, but may be several hours.

① **Select the drive.**
Access the [SYSTEM] "DiskUtil" tab page, and use "DriveID" to select the drive. If a drive has not been initialized or formatted, it will be displayed as "Unknown Disk."



② **Select either Initialize or Format.**
To initialize, select "**Initialize**" for "SelOperation."
To format, select "**Format**."

③ **Execute the Initialize or Format operation.**
Press the "Exec." button. The display will ask "AreYouSure?." To execute, press the "Yes" button. When processing ends, the display will indicate "Completed." Press the "OK" button.
Verify that the display shows the type and capacity of that disk instead of "Unknown Disk."

Using removable disks

Removable disks can be used in the following ways.

- For recording/playback
- For backup/restore

Before a disk can be used for the first time for recording/playback, it must be initialized or formatted.
A disk does not need to be initialized or formatted before it is used for backup/restore.

Some types of removable disks are not suitable for recording/playback.

Exchanging removable disks

If the currently selected song is on a removable disk, use the following procedure to exchange disks.

① **Access the [SYSTEM] "DiskUtil" tab page.**
Use "DriveID" to select the drive.

② **For "SelOperation," select "EjectRMD."**

③ **Press the "Exec." button.**
The disk will be ejected, and the internal drive will be selected.

④ **Insert another disk into the removable disk drive.**
If you are using a playable disk, use the [SONG] "SelSong" tab page to re-select the drive before selecting the song.

4. Importing/exporting WAV files

WAV format audio files from an external drive connected to the [SCSI] connector or from ISO 9660 format CD media can be imported (loaded) into the D1600. Also, audio data in the clipboard of the D1600 can be exported (written) as a WAV format file to an external DOS format (FAT 16) SCSI drive.

WAV files of the following formats can be imported.
Sampling frequency: 44.1 kHz
Quantization: 8 bit, 16 bit, 24 bit
Number of channels: 1 (monaural), 2 (stereo)
Disk format: FAT 16 (DOS format), or ISO 9660 Level 1 for a CD

Importing a WAV file into the beginning of a track

Here's how a monaural WAV file named "Sound001.wav" can be imported into the beginning of track 1 from a DOS format external drive "A:DOS" connected to the [SCSI] connector.

① **Select the Import command.**
Access the [TRACK] "Import" tab page.

② **Select the import source drive.**
Press the "DriveList" button to access the dialog box. Select a DOS format drive that contains the desired WAV file. In this example, select drive "A." Then press the "OK" button to return to the [TRACK] "Import" tab page.

③ **Select the WAV file.**
Press "WavFileList" button to access the dialog box. In this example, select "A:Sound001.wav." Then press the "OK" button to return to the [TRACK] "Import" tab page.

note When importing from a CD, sub-directories are also supported. When importing from another type of SCSI drive, only WAV files saved in the root directory are supported.

You can use the "Prvw" button to preview the first two seconds of the selected WAV file.

④ **Select the import destination track number.**
Set "DestTrack" to track number "1."

⑤ **Execute the Import command.**
Press the "Exec." button. Reply "Yes" to the "AreYouSure?" prompt. When the operation is completed, the display will indicate "Completed." Press the "OK" button.

⑥ **Verify the results of the import.**
Hold down the [STOP] key and press the [REW] key to return to the beginning of the song, and listen to the data to verify that the import was performed correctly. If necessary, you can use Undo to return to the previous state.

The longer the import source file, the more time this operation will take before the "Completed" message appears.

Importing a WAV file into the middle of a track

Here's how a monaural WAV file named "Sound001.wav" can be imported once into the TO location of track 1 from a DOS format SCSI drive "A:DOS" connected to the SCSI connector.

① **Select the Import command.**
Access the [TRACK] "Import" tab page.

② **Select the import source drive.**
Press the "DriveList" button to access the dialog box. Select a DOS format drive that contains the desired WAV file. In this example, select drive "A." Then press the "OK" button to return to the [TRACK] "Import" tab page.

③ **Select the WAV file.**
Press "WavFileList" button to access the dialog box. In this example, select "A:Sound001.wav." Then press the "OK" button to return to the [TRACK] "Import" tab page.

note When importing from a CD, sub-directories are also supported. When importing from another type of SCSI drive, only WAV files saved in the root directory are supported.

④ **Select the clipboard as the import destination track number.**
Set "DestTrack" to "**Clip**."

⑤ **Execute the Import command.**
Press the "Exec." button. Reply "Yes" to the "AreYouSure?" prompt. When the operation is completed, the display will indicate "Completed." Press the "OK" button.

note The longer the import source file, the more time this operation will take before the "Completed" message appears.

⑥ **Register the TO time location.**

⑦ **Select the Copy command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyTrack."

⑧ **Select the clipboard as the copy source track number.**
Set "SourceTrack" to "**Clip1**." The number indicates the number of tracks in the clipboard.

⑨ **Select the copy destination track number.**
Set "DestTrack" to track number "1."

⑩ **Specify the number of times that the data will be copied.**
Set "Times" to "1."

⑪ **Execute the copy operation.**
Press the "Exec." button. Reply "Yes" to the "Are YouSure?" prompt. When the operation is completed, the display will indicate "Completed." Press the "OK" button.

The data will be overwritten onto the copy destination track.

⑫ **Verify the results.**
Press the [TO/LOC3] key, play back from the TO location, and listen to the data to verify that the import was performed correctly. If necessary, you can use Undo to return to the previous state.

Exporting to a WAV file

Here's how the IN–OUT region of data of tracks 1 and 2 from song 001 can be exported as a stereo WAV file named "Sound001.wav" to a DOS format external drive "A:DOS" connected to the SCSI connector.

① **Select song 001.**

② **Register the IN and OUT time locations. (→p.97)**

③ **Select the Copy command.**
In the [TRACK] "EditTrk" tab page, set "EditType" to "CopyTrack."

④ **Select the copy source track number.**
Set "SourceTrack" to track numbers "**1–2**."

⑤ **Select the clipboard as the copy destination track number.**
Set "DestTrack" to "**Clip**."

⑥ **Execute the Copy command.**
Press the "Exec." button. Reply "Yes" to the "AreYouSure?" prompt. When the Copy operation is completed, the display will indicate "Completed." Press the "OK" button.

⑦ **Select the Export command.**
Select the [TRACK] "Export" tab page.

⑧ **Select the export destination drive.**
Press the "DriveList" button to access the dialog box. Select the DOS format drive. In this example, select drive "A." Then press the "OK" button to return to the [TRACK] "Export" tab page.

⑨ **Assign a name to the WAV file.**
Press the "Rename" button to access the dialog box, and modify the name. You can input a name of up to eight characters.

note The filename extension of .WAV will be input automatically.

⑩ **Input the date and time for the WAV file.**
Press the "Date" button to access the dialog box, and enter the year, month, date, hour, minute, and second.

⑪ **Execute the Export command.**

note If you are exporting a 24 bit song as a 16 bit WAV file, make settings for "Bit" and "Dither." (→p.88)

Press the "Exec." button. Reply "Yes" to the "AreYouSure?" prompt. When the Export operation is completed, the display will indicate "Completed." Press the "OK" button.

The Export operation cannot be executed if an identically-named WAV file already exists.

Drive and data compatibility within the Digital Recording Studio series

This section explains how data created on the D1600 is compatible with playable drives (used to create songs) and backup data of the D8, D12, D16, and D16V2 models of the Digital Recording Studio series.

Using D16 and D16V2 data on the D1600

You can connect a D16 or D16V2 disk (backup data or playable disk) to the D1600, and load, record, and edit it as usual.

Using D1600 data on the D16 or D16V2

You can connect a D1600 disk (backup data or playable disk) to the D16 or D16V2, and load, play, record, and edit it as usual.

note On the D16 and D16V2, mixer channels 9/10, 11/12, 13/14, and 15/16 are handled as stereo pairs. For this reason, you must set pairing on the D1600 for channels 9/10, 11/12, 13/14, and 15/16 before you load D1600 data into the D16 or D16V2. Similarly, you must also specify pairing when you register scenes.

Using a D12 playable drive on the D1600

If you connect a D12 playable drive to the D1600, it will appear in the drive list as "D12 [P]," allowing you to select and play songs.
However, the drive will be protected, and it will not be possible to execute recording, track editing, or song editing (except for Song Copy). If you wish to execute these operations, you must first copy the song from the D12 drive to a D1600 playable drive.

It is not possible to copy a song to the D12 drive, or to execute Restore with the D12 drive specified as the restore destination. If you wish to initialize or format the drive, you must select "Force."

Using D12 backup data on the D1600

If a drive containing D12 backup data is connected to the D1600, it will appear in the drive list as "**D12[B]**," and can be restored in the same way as D1600 backup data.

Using a D1600 playable drive on the D12

If a D1600 playable drive is connected to the D12, it will appear in the drive list as "D16[P]," allowing you to select and play songs. However, tracks 13–16 will not be played.
In addition, the drive will be protected, and it will not be possible to execute recording, track editing, or song editing operations (except for Copy Song) on these songs. If you wish to perform these operations, you must select a song on the D12 playable drive, and copy the song from the D1600 drive to the selected drive.

note On the D12, mixer channels 7/8, 9/10, and 11/12 are handled as stereo pairs. For this reason, you must set pairing on the D1600 for channels 7/8, 9/10, and 11/12 before you load D1600 data into the D12. Similarly, you must also specify pairing when you register scenes.

It is not possible to copy a song from the D12 to the D1600 drive, or to execute Restore with it specified as the restore destination.

Using D1600 backup data on the D12

If a drive containing D1600 backup data is connected to the D12, it will appear in the drive list as "D16[B]," and can be restored in the same way as D12 backup data. However, data for tracks 13–16 will not be restored.

note On the D12, mixer channels 7/8, 9/10, and 11/12 are handled as stereo pairs. For this reason, you must set pairing on the D1600 for channels 7/8, 9/10, and 11/12 before you load D1600 data into the D12. Similarly, you must also specify pairing when you register scenes.

When you connect a D1600 playable drive to the D12 and play back a song, or use Copy Song or Restore to load a song, you must set fader, pan, and EQ etc. for channels 7/8 if mixer channels 7/8 are not paired on the original song. You must also make scene registrations in the same way.

Using D8 backup data on the D1600

If you wish to use a D8 song on the D1600, back it up on removable media, and restore it to the D1600. Only the audio data will be loaded into a new song.

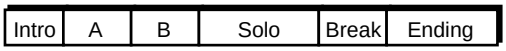
note If you connect a D8 playable disk to the D1600, it will appear in the drive list as "Unknown Disk," and cannot be played as is. Likewise, it is not possible to use D1600 data on the D8.

Regarding disk capacity

This section explains how the D1600 manages disk capacity.

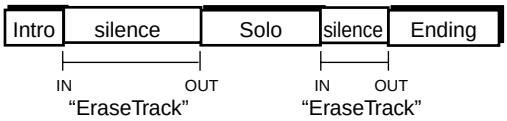
note It is not necessary that the Optimize Track operation explained here be used frequently. It is sufficient to use it only if "DiskBusy" is displayed when you are actually editing, or if you wish to recover more free Disk space after you have finished the song.

For explanatory purposes, we will assume that you have recorded a song with the following structure.



Example 1

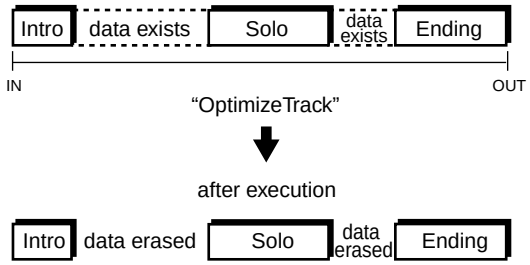
Suppose that you began recording on track 1 from the beginning of the song, and recorded only the Intro, Solo, and Ending as the first pass of recording.



In this case, sections A, B, and the Break will be recorded as silence (in reality, sound at the noise level), and will occupy disk space unnecessarily. Execute the Erase Track operation on the silent portions (A, B, and Break) of track 1. At this time, the has only partially erased the unwanted portions of A, B, and Break, meaning that the disk capacity will not be recovered.

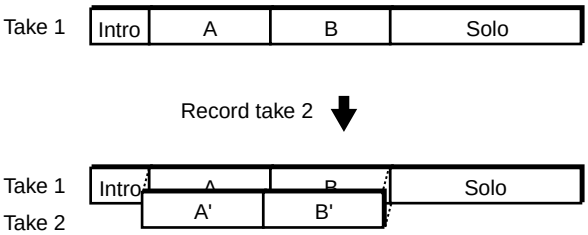
→ If you wish to retain only the audio data that you are actually using (Intro, Solo, and Ending)……

Execute Optimize Track on track 1 between the beginning and end of the song. This will create audio data for only the portions that are actually used, so that only the Intro, Solo, and Ending will occupy disk capacity.



Example 2

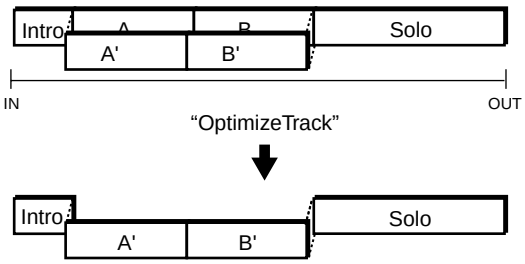
Suppose that you began recording on track 1 from the beginning of the song, and played the Intro, A, B, and Solo as the first take. Then you recorded A' and B' as the second take.



In this case, the A and B (take 1) data underlying A' and B' of track 1 will remain as a single piece of audio data together with the Intro and Solo, in order to allow Undo to be performed. This means that the disk capacity will be occupied by data for the Intro, A+A', B+B', and Solo.

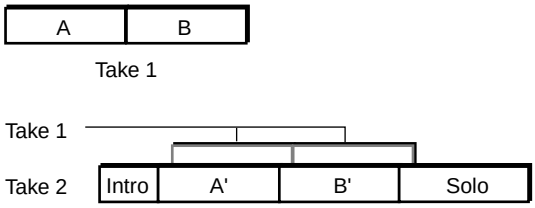
→ If you wish to recover disk capacity by erasing the A and B data from the first take……

Execute the Optimize Track command on track 1 from the beginning to the end of the song. This will create audio consisting only of the Intro of take 1, A' of take 2, B' of take 2, and the Solo of take 1. Sections A and B of take 1 will no longer occupy disk capacity.

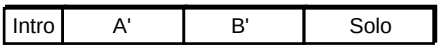


Example 3

Suppose that you recorded A and B on track 1 as the first take. Then you overwrote the Intro, A', B', and Solo as take 2.



In this case, the take 1 data for A and B will remain underlying A' and B' of track 1. However once take 2 is finished, the audio data of take 1 will not be used at all, so it is not necessary to perform the Optimize operation etc.



Deleting the Undo data

Even if you use disk capacity efficiently in the above situations (examples 1, 2, 3), the old data will remain on the hard disk in order to allow Undo.
To erase the data that is maintained by the Undo function, shut down the power of the D1600. When you turn the power on once again, all data that had been maintained for purposes of Undo will be erased, thus allowing you to recover this disk capacity.

Sharing audio data

If before you executed Optimize Track, audio data was used by other tracks (including virtual tracks) or by another song on the same disk, the old audio data will not be erased. This will cause even more disk space to be occupied than before executing Optimize Track.

Note when using DOS format disks

The following functions of the D1600 support FAT16 DOS format. CD, CD-R, and CD-RW are exceptions.

- WAV file import
- WAV file export
- System software update

If the external drive is not recognized

If an external SCSI disk connected to the D1600 is displayed as "Unknown Disk" in the drive list, failing to be recognized, you can use the following procedure to format the disk in FAT 16 DOS format so that the D1600 can recognize it.

① **Connect the external SCSI device to the D1600, and use the "DiskUtil" tab page to initialize it. (→p.68, 79)**

② **Reconnect the external SCSI drive (that you initialized in step ①) to your computer, and format it.**

- **Windows 95/98/Me users**
  If you are using a 2 GB or smaller drive, execute "Normal formatting" in Windows. If you are using a drive larger than 2 GB, use a dedicated formatting program, or use FDISK (included with Windows) to divide the disk into partitions of 2 GB or less, and then execute FAT 16 formatting.
  For the procedure, refer to the manual of the software tool you are using.
- **Windows NT/2000 users**
  If you are using a 2 GB or smaller drive, execute FAT 16 formatting in Windows. If you are using a drive larger than 2 GB, divide the disk into partitions of 2 GB or less, and then execute FAT 16 formatting.
  For the procedure, refer to the manual of the software tool you are using.

  note If you are using Windows NT/2000, you must log on with user privileges that allow you to format the disk.
- **Macintosh users**
  In "Initialize disk", select MS-DOS format, and execute formatting.

All data on the formatted disk will be lost. Be very careful not to format a drive other than the drive you intend to format. Korg Corporation can take no responsibility for any loss of data.

③ **Reconnect the external SCSI drive that you formatted in step ② to the D1600, and verify that it is recognized.**

Step 14. MIDI

What is MIDI?

MIDI stands for **M**usical **I**nstrument **D**igital **I**nterface, and is a world-wide standard that allows a variety of musical information to be exchanged between electronic musical instruments and computers.

1. MIDI connections

Special MIDI cables are used to transmit and receive MIDI messages. Connect these cables between the MIDI connectors of the D1600 and the MIDI connectors of the external device with which you wish to exchange data.
MIDI IN connector: MIDI messages from another MIDI device are received here. Connect this to the MIDI OUT connector of the external device.
MIDI OUT connector: The D1600 transmits MIDI messages from this connector. Connect this to the MIDI IN connector of the external device.

MIDI channel settings

MIDI allows information for multiple MIDI devices to be conveyed over a single MIDI cable by using sixteen **MIDI channels**, 1–16. If MIDI messages are being transmitted on MIDI channel "**1**", the messages will not be received unless the receiving device is also set to MIDI channel "**1**."

2. MIDI messages used by the D1600

Note, **aftertouch**, **velocity**, **pitch bend**: This data is used by the D1600 to control effects.
Program change: This data is used by the D1600 to select scenes.
Control change: This data is used by the D1600 to control mixer parameters.
MMC (**M**IDI **M**achine **C**ontrol): MMC messages can be transmitted to control an external sequencer or recorder. MMC messages can also be received to control the D1600 from an external sequencer or recorder.
MTC (**M**IDI **T**ime **C**ode): MTC messages can be transmitted to cause an external sequencer or recorder to operate in synchronization with the D1600. MTC messages can also be received to synchronize the D1600 with another device.

About the MIDI implementation chart

The owner's manual of each MIDI device contains a MIDI implementation chart. This chart makes it easy for you to verify the MIDI messages that the device can transmit and receive. When using two MIDI devices together, compare their MIDI implementation charts to verify the types of MIDI message that they are able to exchange.

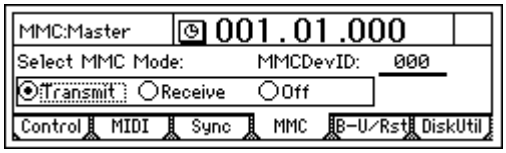
* For more details on the MIDI specifications, refer to the separate MIDI implementation. To obtain the MIDI implementation, please contact your Korg distributor.

3. Using MIDI

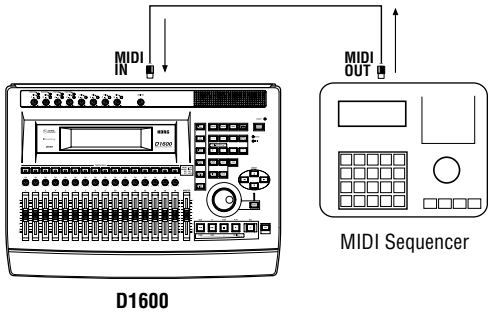
Controlling the D1600 from a MIDI sequencer

Here's how the MMC messages transmitted from a MIDI sequencer can be used to stop/play/fast-forward/rewind/record/locate the D1600.

note You must use a MIDI sequencer that supports MMC. These following operations are not possible with a sequencer that does not support MMC.



① **Make MIDI connections.**
Use a MIDI cable to connect the MIDI OUT connector of your MIDI sequencer to the [MIDI IN] connector of the D1600.



② **Make settings on your MIDI sequencer so that it will output MMC messages to control external devices.**
For details refer to the owner's manual for your MIDI sequencer.

③ **Turn on MMC reception.**
In the [SYSTEM] "MMC" tab page, set "SelectMMCMode" to "**Receive**."

④ **Set the device ID settings to match.**
Set "MMCDevID" to the same setting as the MMC device ID of your MIDI sequencer.

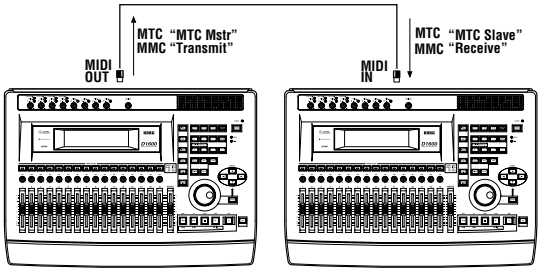
note Since the device ID specifications may differ depending on the type of your MIDI sequencer, it may not be necessary for the number to be the same.

⑤ **Operate your external MIDI sequencer.**
When you perform stop/play/fast-forward/rewind/record/locate operations on your MIDI sequencer, the D1600 will be controlled accordingly. (For details refer to the owner's manual for your MIDI sequencer.)

note At this time, you can also make the D1600 transmit MTC (MIDI Time Code) or MIDI Clock messages to synchronize the MIDI sequencer, so that the two devices will be synchronized as the sequencer controls stop/play/fast-forward/rewind/record/locate operations on the D1600.

Synchronizing two D1600 units

Here's how you can synchronize two D1600 units. One D1600 will be the master, and the other will be the slave. Make connections as follows.



D1600 (Master) **D1600** (Slave)

① **Make settings on the master D1600.**
In the [SYSTEM] "Sync" tab page, set "Select MIDI SyncMode" to "**MTC Mstr**." In the [SYSTEM] "MMC" tab page, set "Select MMC Mode" to "**Transmit**."
For this example, set "MMCDevID" to "**10**."

② **Make settings on the slave D1600.**
In the [SYSTEM] "Sync" tab page, set "Select MIDI SyncMode" to "**MTC Slave**." In the [SYSTEM] "MMC" tab page, set "Select MMC Mode" to "**Receive**." For this example, set "MMCDevID" to "**10**" (the same as the master).

note If you do not want to receive mixer control data, you can either turn the [SYSTEM] "MIDI" tab page "Control Change: Trans" parameter "**Off**" on the master D1600, or turn the [SYSTEM] "MIDI" tab page "Control Change: "Recv" parameter "**Off**" on the slave D1600.

③ **Press the [PLAY] key on the master D1600.**
When the slave D1600 receives time code and establishes synchronization with the time code of the master unit, the slave D1600 will begin playback.

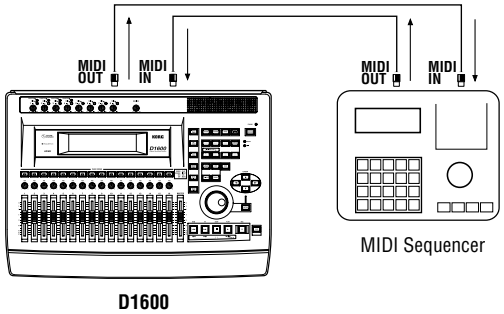
note Several seconds may be required in order for synchronization to be established.

Using MIDI for mixer control

In the [SYSTEM] "MIDI" tab page you can turn the "Control Change: Trans" and "Recv" parameters "ON" so that D1600 mixer parameters can be transmitted and received.

Recording D1600 mixer control operations

Here's how operations of the D1600 mixer can be recorded on an external MIDI sequencer. Connect the D1600 and your MIDI sequencer as follows.



D1600

① **Make synchronization settings for the D1600 and your external MIDI sequencer.**
Set the D1600 as the master and the external MIDI sequencer as the slave. Make preparations so that your MIDI sequencer will synchronize to the MIDI Clock or MTC messages transmitted from the D1600. (→p.47)

② **Enable control change transmission on the D1600.**
In the [SYSTEM] "MIDI" tab page, turn the "Mixer Control" parameter "Control Change: Trans" to "ON."

③ **Put the external MIDI sequencer in record-ready mode.**
The mixer control data of the D1600 will be transmitted on MIDI channels 1–16 corresponding to tracks 1–16. Make settings on your external MIDI sequencer so that MIDI channels 1–16 will be recorded. (For details refer to the owner's manual of your MIDI sequencer.)

note For the parameters, refer to the MIDI implementation. To obtain the MIDI implementation, contact your Korg distributor.

④ **Begin recording.**
When you press the D1600's [PLAY] key to start playback, the external MIDI sequencer will begin recording in synchronization. Now when you operate the mixer parameters (fader, pan, EQ etc.), the corresponding control change will be transmitted from the D1600, and recorded on the external MIDI sequencer.

⑤ **Stop the D1600.**
When you press the D1600's [STOP] key to stop playback, the external MIDI sequencer will also stop recording. The mixer operations of the D1600 have been recorded on the external MIDI sequencer.

Using MIDI to control the D1600 mixer

Here's how the mixer control data recorded in "Recording D1600 mixer control operations" can be transmitted back to the D1600 to control its mixer. Make the same connections as in "Controlling the D1600 from a MIDI sequencer."

① **Make synchronization settings for the D1600 and the external MIDI sequencer.**
Make the settings in step ① of "Recording D1600 mixer control operations."

② **Enable control change reception on the D1600.**
In the [SYSTEM] "MIDI" tab page, turn the "Mixer Control" parameter "Control Change: Recv" to "ON."

③ **Put the external MIDI sequencer in playback-ready mode.**

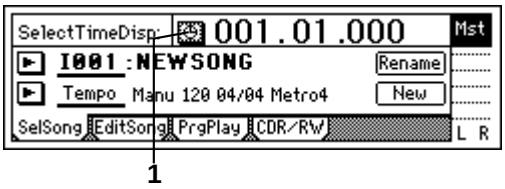
④ **Begin playback on the D1600.**
When you press the D1600's [PLAY] key to begin playback, the external MIDI sequencer will also begin playback in synchronization. The previously-recorded mixer control data will be transmitted from the MIDI sequencer, causing the D1600 mixer settings to change.

Reference

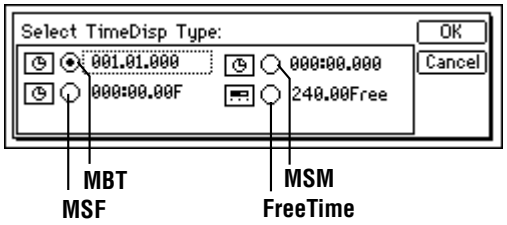
1. COUNTER

Counter: Counter display

The counter located in the upper right of each page shows the current location of the recorder.



1. **Select TimeDisp Type** .....
This switches the counter display. When you press the " " button at the left of the counter, the "Select TimeDisp Type" dialog box will appear. Select the desired type of display, and press the "OK" button.



___.__.___ **(MBT)**: The current location will be shown in **measures** from the beginning of the song. From the left, the numbers indicate the Measure, Beat, and Tick (1/96 beat).

___:__.___ **(MSM)**: The current location will be shown as an **absolute time** from the beginning of the song.
From the left, the numbers are Minutes: Seconds. Milliseconds (1/1000 second).

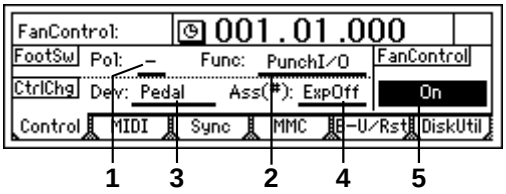
__:__.__**F (MSF)**: The current location will be displayed as the **absolute time and the number of frames** from the beginning of the song. You will normally select this display type if you are using MTC synchronization.
From the left, the numbers are Minutes: Seconds. Frames (1/30 second).

___.__**Free (Free Time)**: The **remaining time available for recording** on the currently selected drive will be shown.
From the left, the numbers are Minutes. Seconds.

note To change the current time of the counter, move the cursor to the counter value, and use the [VALUE] dial to change the value. (→p.35)

2. SYSTEM

P1 Control: Foot switch/control change device (pedal/MIDI) settings



1. **Pol(FootSwPolarity)** .....**[–, +]**
This sets the polarity of the foot switch.
Connect a foot switch (such as the separately sold PS-1 option) to the front panel [FOOT SW] jack, and set this parameter so that the polarity indicator " " is lit when you press the foot switch.

2. **Func(FootSwFunction)** .....
[PunchI/O, Play/Stop, Mark]
Select the function that the foot switch will control.
PunchI/O: The foot switch will start/stop manual punch recording.
Use the [TRACK STATUS] keys to set the desired track to **REC**, begin playback, and press the foot switch at the location where you wish to begin recording. Press the foot switch again to stop recording. (→p.28)
Play/Stop: The foot switch will start/stop playback. Press the foot switch to start playback, and press it again to stop playback.
Mark: The foot switch will register a mark. When you press the foot switch, a mark will be registered at that time location.

While this page is displayed, the foot switch will be used only to verify the polarity, and the specified function will be disabled. Also during tap recording, the function you select here will be ignored, and the foot switch will automatically function as a tap marker. (→p.63)

3. **Device(CtrlChgDevice)**.....
[Pedal, A.Touch, P.Bend, Velocity, NoteNum, CC#000...119]
Select the external device that will control the internal effects of the D1600. The effect selected by "Ass" (P1-4) can be controlled in real-time.
Pedal: An expression pedal can be used to control the effect. Connect an expression pedal (separately sold option: XVP-10, EXP-2 etc.) to the [EXPRESSION PEDAL] jack, and operate the pedal to control the effect.
A.Touch, P.Bend, Velocity, NoteNum: MIDI aftertouch, pitch bend, velocity, or note number data can be used to control the effect.

Connect the MIDI OUT of your external MIDI device to the [MIDI IN] connector on the D1600, and transmit the selected MIDI data from the external MIDI device to control the effect.
CC(Control Change) #000…119: MIDI control change messages can be used to control the effect. Connect the MIDI OUT of your external MIDI device to the [MIDI IN] connector on the D1600, and transmit the selected MIDI control change message from the external MIDI device to control the effect.

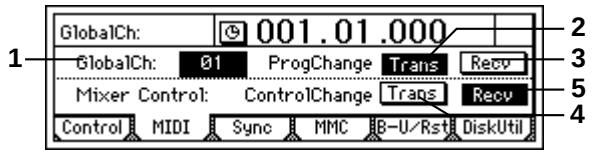
4. **Ass(CtrlChgAssign) ..... [ExpOff, InsEff1…4]**
Select the insertion effect that will be controlled. The insertion effect that you select here will be controlled by the selected "Device" (P1-3).
ExpOff: The insertion effect will not be controlled.
InsEff1, InsEff2, InsEff3, InsEff4: Insertion effect 1, 2, 3, or 4 will be controlled respectively.

If the effect program that you are using does not provide control capability, it cannot be controlled. (→p.113–)

5. **Fan Control..... [On, Rec&PlayOff, Off]**
Control the operation of the internal fan.
On: The fan will operate constantly.
Rec&PlayOff: The fan will stop during recording and playback.
Off: The fan will stop.

note If the internal temperature rises, the fan will begin operating automatically even if this setting is "Off." When the temperature falls to an acceptable level, the fan will stop automatically.

P2 MIDI: MIDI settings



On the D1600, you can use MIDI to do the following things:

- Control effects (→p.47)
- Synchronize with MIDI devices such as sequencers (→p.73)
- Select scenes (→p.41)
- Use control changes to control mixer parameters.

1. **GlobalCh(GlobalChannel) .....[01…16]**
Specify the global MIDI channel.
This setting is required in the following situations.
   - When using MIDI messages to control an effect with a "Device" (P1-3) setting other than "**Pedal**"
   - When using program change messages to transmit/receive scene changes

   To allow MIDI messages to be transmitted and received, connect the external MIDI device to the D1600 via MIDI, and set the MIDI channel of the external device to match the "GlobalCh" of the D1600.

2. **ProgramChange: Trans .....[On, Off]**
Turn program change message transmission on/off. Program changes are transmitted when you switch scenes, or execute a Store or Recall operation.

3. **ProgramChange: Recv .....[On, Off]**
Turn program change reception on/off.
When a program change is received, the scene will change.

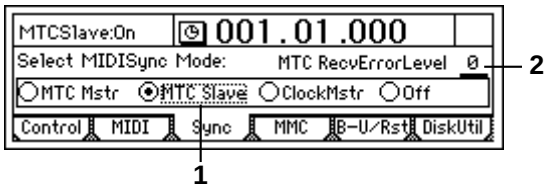
4. **ControlChange: Trans .....[On, Off]**
Turn control change message transmission on/off. The corresponding control change message is transmitted when you modify a mixer parameter.
A external sequencer connected via MIDI can record the control changes transmitted from the D1600.

5. **ControlChange: Recv .....[On, Off]**
Turn control change reception on/off.
Control change messages that were recorded on an external MIDI sequencer can be received by the D1600 to control the corresponding mixer parameters.
For the parameters that can be controlled, refer to the MIDI implementation chart (→p.142).

P3 Sync: Synchronization settings

By synchronizing the D1600 with an external MIDI sequencer, you can simultaneously play back tracks of audio together with your external tone generator.

The action of making the D1600 operate at the same timing as a MIDI sequencer is called **synchronization**. The device transmitting the synchronization clock is called the **master**, and the device receiving the synchronization clock is called the **slave**. The D1600 can operate either as the master or slave.



1. **Select MIDISync Mode ..... [MTC Mstr, MTC Slave, Clock Mstr, Off]**
Select the synchronization messages that will be transmitted and received from the [MIDI IN/OUT] connectors.
MTC Mstr: The D1600 will function as the master device for MTC 30 NDF (MIDI time code 30 non-drop frame) messages.
MTC Slave: The D1600 will function as the slave device for MTC 30 NDF (MIDI time code 30 non-drop frame) messages.
ClockMstr: The D1600 will transmit MIDI Clock messages.
Off: The D1600 will not transmit or receive synchronization messages.

2. **MTC RecvErrorLevel ..... [0...10]**
Specify the MTC check level used if "SelectMIDI-SyncMode" is set to "**MTC Slave**."

If, due to some problem, MTC messages are not sent consecutively to the D1600, the D1600 will detect the abnormal MTC state and may stop synchronization and halt playback. In such cases, you can lower the "MTC RecvErrorLevel" setting so that synchronized playback will continue even if some problems occur with MTC reception.

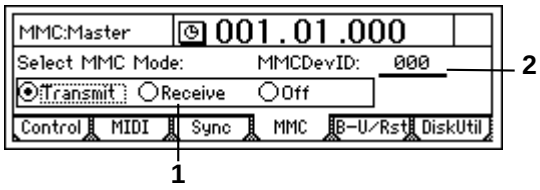
note If this is set to "0," synchronized playback will not stop even if a problem occurs.

Depending on the compatibility between the two devices when a device other than the D1600 is used as the MTC master for synchronization, correct synchronization may not be possible unless you start from the beginning of the song.

P4 MMC: MMC settings

The D1600 transmits and receives **MMC** (MIDI Machine Control) messages.
When synchronizing two D1600 units, or when using the D1600 together with an MMC-compatible MIDI sequencer, you can playback, stop, or fast-forward etc. by operating only the master device.

Some MIDI devices may not respond to the MMC functionality of the D1600. Details on the MMC functionality of the D1600 are given in the MIDI implementation.



1. **Select MMC Mode ..... [Transmit, Receive, Off]**
   Turn MMC transmission or reception on/off.
   Transmit: MMC will be transmitted.
   Receive: MMC will be received.
   Off: MMC will not be used.

2. **MMCDevID (MMC Device ID) .....[000...127]**
   Specify the device ID that will be used when transmitting/receiving MMC.
   To enable MMC transmission/reception, connect the external MIDI device to the D1600 via MIDI, set the device ID to match, and set "Select MMC Mode" appropriately.

note If this parameter is set to "127," MMC can be transmitted/received to/from all ID numbers.

P5 B–U/Rst: Backing-up and restoring data to removable disk

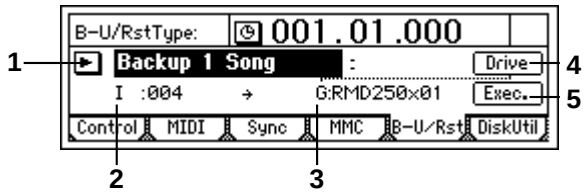
You can backup (save)/restore (recall) data using a removable disk such as a CD-R or CD-RW.

The following data can also be restored.

- D1600 backup data
- D12 backup data
- D16 backup data
- D8 backup data (audio data only)

note For details on data compatibility, refer to p.70.

Be aware that backup and some restore operations will overwrite the data on the destination drive. One drive can accommodate data for only one backup.



1. **B–U/RstType ..... [Backup1Song, BackupAllSongs, BackupUserData, Restore]**
   Select the type of data backup/restore operation.
   If you press the "▶" button, you can select from a dialog box.

○ **On this and the following pages, the items in the screen are explained separately for each of these types.**

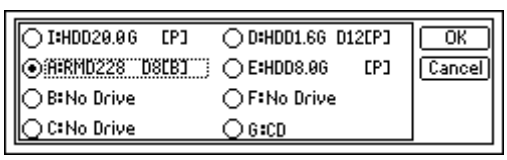
B–U/RstType: "Backup1Song"
Back up the selected song and effect user data from the current drive.

2. **Source ..... (I, A...G: 001...100)**
   This displays the backup source drive and song number.
   The drive and song number of the song selected in [SONG] "SelSong" tab page will be displayed. (→p.88)

3. **Destination ..... (A...G: RMD---- x01...99)**
   This displays the backup destination drive, information on the drive ("**RMD----**" or "**CD**"), and the number of media volumes required ("**x1**"–"**x99**").
   Use "Drive" to select the backup destination drive. (→P5-4)

Be aware that you must use a blank disc when backing up to CD-R or CD-RW.

4. **Drive .....[A...G]**
   Select the backup destination drive.
   When you press this button, a dialog box will appear. Select the drive and press the "OK" button.



Drive ID .....[I, A...G]
I: Internal IDE (the internal drive)
A: SCSI ID0, **B**: SCSI ID1, **C**: SCSI ID2, **D**: SCSI ID3, **E**: SCSI ID4, **F**: SCSI ID5, **G**: SCSI ID6

note "**G**" is the ID for CD-R or CD-RW. If a CD-R or CD-RW drive is connected to the [SCSI] connector, set the SCSI ID of the drive to "6."

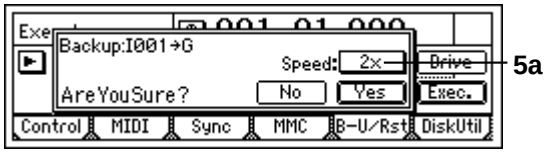
If a CD-ROM drive, a CD-R or CD-RW drive, or a hard disk is connected to Drive ID "G," the internal CD-RW drive cannot be used.

Device Type, Total Size..... (HDD, RMD, CD)
This shows the type of drive (type and capacity).
HDD: Hard disk drive
RMD: Removable disk drive
CD: CD-ROM, CD-R, CD-RW

* "**Removable disk drive**" is a collective term for drives from which the disk can be removed, such as MO, Zip, or Jaz drives.

Format Type..... (P, B, D8[B], D12[P], D12[B], Audio)
This shows the format type of the drive.
The internal drive of the D1600 and external drives that were initialized or formatted by the D1600 will be displayed as "playable" drives that can be used to create and play songs. All other drives will be displayed as "backup" drives.
[P] (Playable type): A disk for creating/playing D1600, D16 songs
[B] (Backup type): A disk for backing up D1600, D16 data
D8[B]: D8 backup disk
D12[P]: D12 playable disk
D12[B]: D12 backup disk
Audio: Audio CD

5. Exec. (Execute) .....
Execute the backup operation.
The single "Source" song will be backed up to the "Destination" drive. The effect user data will also be backed up at this time.

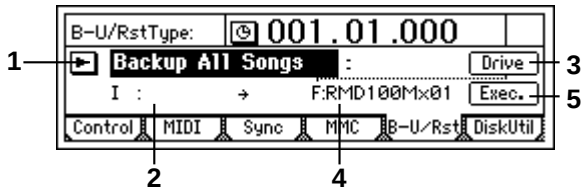


5a. Speed.....[2X, 4X]
You can specify the speed at which the data will be written when backing up to a CD-R/RW.
4X: The data will be written at 4X speed.
2X: The data will be written at 2X speed.
When the "AreYouSure?" prompt appears, press the "Yes" button to begin backup.

When using "4X," you must use a drive that supports 4X writing. Depending on your system (hard disk and CD-R/RW drive etc.), backing up at "4X" may be unsuccessful. If this occurs, use the "2X" setting.

Be aware that the data on the backup destination drive ("Destination") will be overwritten.

B–U/RstType: "BackupAllSongs"
Back up all songs and user effect data on the selected drive.



2. Source ..... (I, A...G)
This shows the backup source drive.
Use [SONG] "SelSong" tab page to select the backup source drive. (→p.88)

3. Drive.....[A...G]
Select the backup destination drive.
When you press this button, a dialog box will appear. Select the drive and press the "OK" button. (→p.77: P5-4)

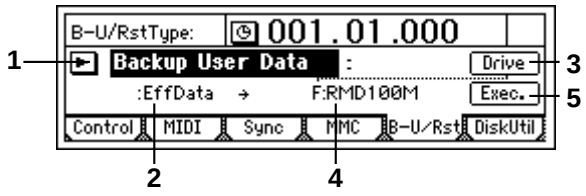
4. Destination..... (A...G: RMD, CD---- x01...99)
This shows the backup destination drive, drive information ("**RMD----**" or "**CD**"), and the number of media volumes required ("**x1**"–"**x99**").
Use "Drive" to select the backup destination drive.

5. Exec. (Execute) .....
Execute the backup operation.
All songs on the "Source" drive will be backed up to the "Destination" drive. Effect user data will also be backed up at this time.

5a. Speed .....[2X, 4X]
You can specify the speed at which the data will be written when backing up to a CD-R/RW. (→B–U/RstType: "Backup1Song")

Be aware that the data on the backup destination drive ("Destination") will be overwritten.

B–U/RstType: "BackupUserData"
This operation backs up effect user data.



2. Source ..... (Effect Data)
This shows the effect user data that will be backed up.
This will show the song and effect user data of the song selected by [SONG] "SelSong" tab page (→p.88)

3. Drive.....[A...G]
Select the backup destination drive.
When you press this button, a dialog box will appear. Select the drive and press the "OK" button. (→p.77: P5-4)

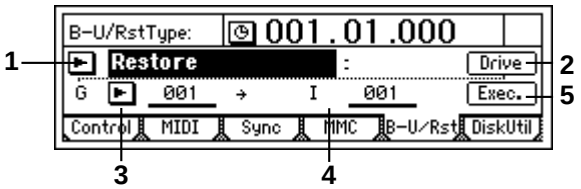
4. Destination..... (A...G/RMD, CD)
This shows the backup destination drive.
Use "Drive" to select the backup destination drive.

5. Exec. (Execute).....
Execute the backup operation.
Effect user data will be backed up to the drive specified by "Destination."

5a. Speed ..... [2X, 4X]
You can specify the speed at which the data will be written when backing up to a CD-R/RW. (→B–U/RstType: "Backup1Song")

Be aware that the data on the backup destination drive ("Destination") will be overwritten.

B–U/RstType: "Restore"
This command restores song data or effect user data that was backed up earlier.
For a disk or CD on which "Backup 1 Song" was executed, this command will restore that single song and effect user data.
For a disk or CD on which "BackupAllSongs" was executed, you can select whether this command will restore a single song or all songs.
For a disk or CD on which "BackupUserData" was executed, this command will restore the effect user data.



2. Drive.....**[A...G]**
Select the restore source drive.
When you press this button, a dialog box will appear. Select the drive and press the "OK" button. (→p.22, 77: P5-4)
Insert the disk or CD containing the backup data before you select "Drive."

3. Source.....**[(A...G): 001...100, All]**
Select the restore source song number.
By pressing the "▶" button, you can select the song number from a dialog box.
The song number can be selected only if you are restoring a single song from a drive that was backed up using "BackupAllSongs." If you wish to restore only a single song, select from "**001**"–"**100**" (up to the number of songs that exist). If you wish to restore all songs, press "SelectAll" in the dialog box, and choose "**All**".
Use "Drive" to select the restore source drive.

4. Destination.....**[(I, A...G)/001...100, ***]**
This shows the restore destination drive, and lets you select the song number. If you are restoring one song, it will be restored to the song number that you select here. If you wish to restore all songs, choose "***."
The drive of the song you selected in [SONG] "SelSong" tab page will be displayed. (→p.88)

5. Exec. (Execute).....
Execute the Restore command.
The song or user data selected for "Source" will be restored to the "Destination" drive.
When restoring one song, the "Source" song will be written to the specified "Destination" song number. Any songs located at the "Destination" number and following will have their song numbers incremented – they will not be overwritten.
When you restore all songs, all songs of the "Source" will be added following the songs that currently exist on the "Destination" drive – the existing songs will not be overwritten.
When you restore effect user data, the user data of the "Source" will be overwritten onto the user data of the "Destination" drive.

note When restoring one song or all songs, you can select whether the effect user data will be overwritten. (→"Restore:UserData")

Before the Restore command is executed for one song or all songs, the capacity of the restore destination will be checked, and the command will not be executed if the capacity is insufficient.

6. Restore:UserData ..... **[Yes, No]**
A dialog box will appear, allowing you to specify whether the backed-up effect user data will be overwritten onto the current effect user data after the song data has been restored.

note User data is backed up automatically when song data is backed up.

Yes: Effect user data will be restored.
No: Effect user data will not be restored.

When you restore this data, it will be overwritten onto the existing user effect data.

P6 DiskUtil: Initialize/format/check a drive

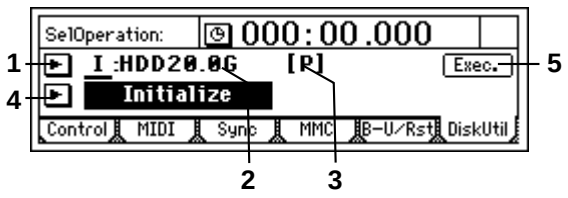
Here you can initialize, format, or check a drive.

Before a disk can be used to record or play songs for the first time, it must be initialized or formatted.

- **Initialize** a disk to erase the contents of a newly purchased disk before using it for the first time.
- **Format** a disk that was previously used by another device before using it on the D1600, or if the "Disk Error" display appears frequently during playback.

note It is not necessary to initialize or format a removable disk that you are using for backup.

When you execute the Initialize or Format operation, the data of that drive will be lost.



1. Drive ID.....**[I, A...G]**
Select the drive that you wish to initialize, format, or check.

If you press the "▶" button, you can select the drive from a list. (→p.22, 77: P5-4)

2. **Device Type, Total Size..... (HDD, RMD, CD)**
This shows the type and capacity of the drive.
HDD: Hard disk drive
RMD: Removable disk drive
CD: CD-ROM, CD-R, CD-RW

CD media can be used only when "LoadSystem" is selected for "SelOperation."

3. **Format Type..... (P, B, D8[B], D12[P], D12[B], Audio)**
This displays the format type of the drive.
The internal drive of the D1600 and external drives that were initialized or formatted by the D1600 will be displayed as "playable" drives that can be used to create and play songs. All other drives will be displayed as "backup" drives.
[P] (Playable type): A disk for creating/playing D1600, D16 songs
[B] (Backup type): A disk for backing up D1600, D16 data
D8[B]: D8 backup disk
D12[P]: D12 playable disk
D12[B]: D12 backup disk
Audio: Audio CD

It is not possible to format, initialize, or check an audio CD.

4. **SelOperation .....[EjectRMD, CheckDrive, Initialize, Format, LoadSystem]**
Select the operation that you wish to execute on the drive.
Press the "▶" button and select from the list.
EjectRMD: The removable disk selected by "DriveID" will be ejected.
If the currently selected song is on the removable disk, the disk will be locked by the D1600, and must be ejected using this command. Otherwise, you can also use the eject switch of the drive to eject the disk. (→p.68)
CheckDrive: Errors on the drive selected by "Drive ID" will be detected and repaired.
Execute this operation if Disk or DiskBusy error messages appear frequently. After execution, the song data will still be usable if no major errors were found on the drive.

Full SW.....[ON, OFF]
Specify the area that will be checked by Check Drive.
ON: The entire area will be checked and repaired.
OFF: 2 GB of unused area will be checked and repaired.

Check Drive requires a certain amount of time for completion. If you are using the Korg HDD-20G drive, the following times will be required. Full SW ON: 240 minutes. Full SW OFF: 30 minutes.

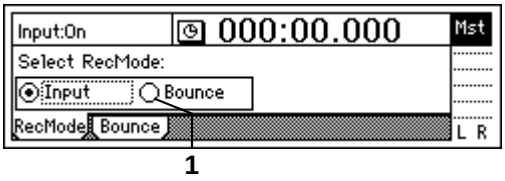
Initialize: The drive selected by "Drive ID" will be initialized.
Format: The drive selected by "Drive ID" will be formatted.

Force .....[On, Off]
This setting allows a disk to be formatted or initialized even if it contains a protected song.
On: Even if the disk contains a song protected by "Protect Song," initialization will be performed forcibly.
Off: If the disk contains a song protected by "Protect Song," a message of "Song Protect" will be displayed when you attempt to initialize, and the command will be aborted.

LoadSystem: System software will be loaded from the drive selected by "Drive ID" to rewrite the operating system of the D1600. For details refer to "Updating the system software" (→p.139).

3. RECORD

P1 RecMode: Selecting the recording mode



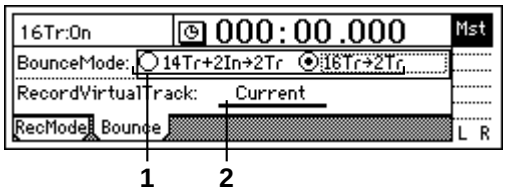
1. **Select RecMode .....[Input, Bounce]**
Select the recording mode.
Input: The input (analog, digital, internal rhythm, internal CD) will be recorded. The recording level of each track is adjusted by the channel faders. Select this for normal recording.
Bounce: The master LR bus will be recorded. The playback level of each track is adjusted by the channel faders, and the recording level is adjusted by the master faders.
You will select this mainly for the following situations.

- Pingpong recording (combining multiple tracks to two tracks)
- Recording the sound processed by the master effect
- Recording multiple inputs on two tracks.

When "**Bounce**" is selected, a maximum of two tracks can be recorded simultaneously.

P2 Bounce: Settings for bounce recording

For the procedure of bounce recording, refer to p.29.



1. **Select BounceMode ..... [14Tr+2In→2Tr, 16Tr→2Tr]**
   Select the type of bounce recording.
   14Tr+2In→2Tr: Select this when recording 14 tracks of playback + 2 inputs onto two tracks.
   The input sound selected in the [INPUT] "Ch1–8" tab page and "Ch9–16" tab page will be valid for the channel(s) whose [TRACK STATUS] key is set to **REC** (LED lit red), and will be recorded together with the other playback tracks.
   16Tr→2Tr: Select this when recording 16 tracks of playback onto two tracks.
   The track playback will be valid for the channel(s) whose [TRACK STATUS] key is set to **REC** (LED lit red), and will be recorded together with the other playback tracks.

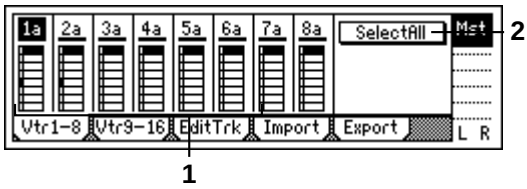
Be aware that if "Rhythm" is set to "**On**" during bounce recording, the rhythm will also be recorded together with the other sounds (→p.61).

2. **RecordVirtualTrack..... [Current, a…h]**
   Select the recording destination virtual track.
   Select the virtual track of the recording track selected by the [TRACK STATUS] key on which bounce recording will occur.
   By selecting a virtual track "a"–"h" other than "Current," you can combine tracks 1–16 into two tracks without erasing any of the tracks 1–16.
   Current: The currently selected track
   a…h: The specified virtual track
   However if the same virtual track is selected both here and for [TRACK] "Vtr1–8" or "Vtr9–16" tab page the result will be the same as if "Current" were selected.

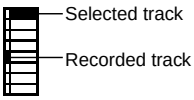
To avoid accidentally recording a track that has already been recorded, use the [TRACK] "Vtr1–8" and "Vtr9–16" tab pages to see which virtual tracks are currently selected and which contain data.

4. TRACK

P1 Vtr1–8: Select virtual tracks 1–8



1. **Select VirtualTrack..... [1a…1h, …, 8a…8h]**
   Select the virtual track for each track "**1**"–"**8**."
   Each track has eight virtual tracks: "**a**"–"**h**." One of these virtual tracks can be selected for recording/playback.



2. **SelectAll ..... [On, Off]**
   Turn this "**On**" if you wish to use the same virtual track number for all tracks (1–16). Then choose any "Select VirtualTrack" to choose the track.
   SelectAll **On**: All tracks will be set to the same virtual track number.
   SelectAll **Off**: The virtual track number can be selected independently for each track.

P2 Vtr9–16: Select virtual tracks 9–16

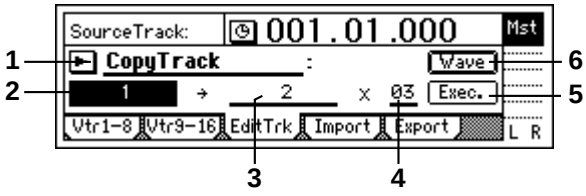
For details refer to "Vtr1–8."

This page cannot be selected for a 24 bit song.

1. **Select VirtualTrack..... [9a…9h, …, 16a…16h]**
   Select the virtual track for each pair of tracks.

2. **SelectAll ..... [On, Off]**

P3 EditTrk: Track editing

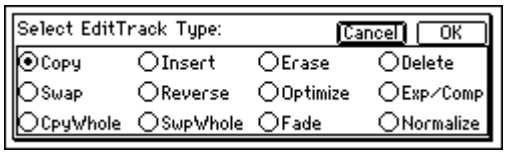


Editing will apply to currently selected tracks 1–16 (→"Vtr1–8," "Vtr9–16"). Virtual tracks that are not selected will not be affected by editing. (However, "**CopyWholeTrack**" and "**SwapWholeTrack**" are exceptions.)

note The range (area of time) that will be edited is determined by the time locations that are registered in the [IN/LOC1], [OUT/LOC2], [TO/LOC3], and [END/LOC4] keys. (→p.35, 97)

note The undo operation is available after you execute an editing operation.

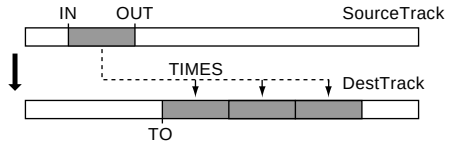
1. EditType.....[CopyTrack, InsertTrack, EraseTrack, DeleteTrack, SwapTrack, ReverseTrack, OptimizeTrack, Exp/CompTrack, CopyWholeTrack, SwapWholeTrack, FadeTrack, NormalizeTrack]
Select type of editing operation. (→p.51)
This screen will differ depending on the type you select here.
Press the "▶" button and select an editing operation from the dialog box.

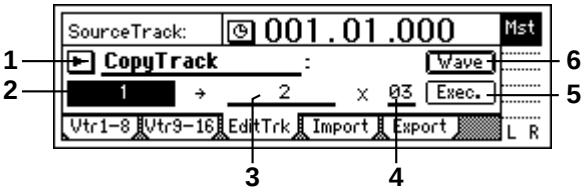


○ **Each editing operation you select here is explained separately, below.**

EditType: "CopyTrack"
This operation copies the audio data in the **IN**–**OUT** range of the copy source track ("SourceTrack") to the **TO** location of the copy destination track ("DestTrack"), repeating the specified number of times.
You can use the clipboard to copy data to a track of a different song.

When this is executed ("Exec."), the copy destination track ("DestTrack") will be overwritten.





2. SourceTrack .....[1...16, 1–2...15–16, 1–4...13–16, 1–8...9–16,1–16, Clip#[*1]]
Select the copy source track.
[*1]: "**Clip#**" can be selected only if the clipboard contains data. # is the number of tracks in the clipboard. You can use "**Clip#**" to copy data from the tracks of another song. When data is copied between songs of differing "Bit" (quantization) settings, the data will be handled as 16 bit data at the copy destination.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. DestTrack .....[1...16, 1–2...15–16, 1–4...13–16, 1–8...9–16, 1–16, Clip#[*1]]
Select the copy destination track.
[*1]: The number of tracks in the clipboard is shown in #. You can use "**Clip#**" to copy data to a track of another song. When data is copied between songs of differing "Bit" (quantization) settings, the data will be handled as 16 bit data at the copy destination.

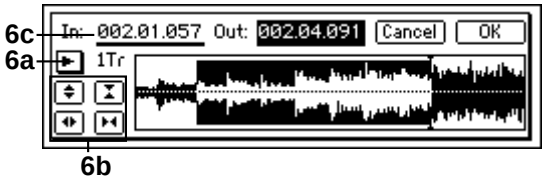
note In the case of a 24 bit song, only tracks **1–8** can be selected.

4. Times .....[1...99]
Specify the number of times that the data will be copied.

5. Exec. (Execute) .....
Execute the track editing operation.

6. Wave.....
This area displays the audio data of the track as a waveform.
Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely.
This can be selected when the cursor is at "SourceTrack" or "DestTrack."

note Before you make settings here, it is best to make approximate settings for the **IN**, **OUT**, and **TO** times, and register them.

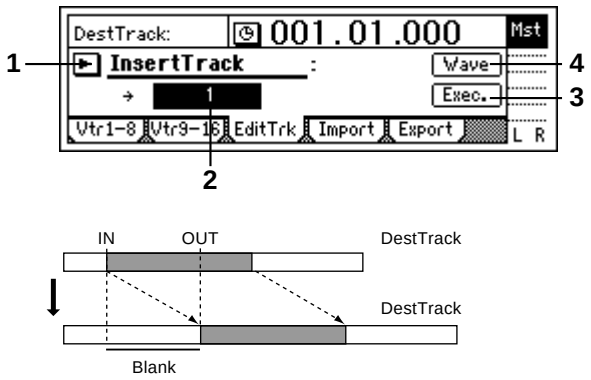


6a. SelectTrack .....
Select the track for which you wish to make time settings.

6b. Zoom In/Out/Up/Down .....
Adjust the displayed range and height of the waveform.

6c. Locate .....[In, Out, To]
Make Locate settings.
When you place the cursor at "Locate," the Scrub function will automatically be turned on, and you can rotate the [VALUE] dial to listen to only the "SelectTrack" (solo) as you set the Locate points.
When you press the **"OK" button**, the specified times will be overwritten onto the corresponding keys ([IN/LOC1] etc.). If you press the **"Cancel" button**, the setting will be cancelled.

EditType: "InsertTrack"
This operation inserts a blank in the **IN**–**OUT** range of the insert destination track ("DestTrack").
When this is executed ("Exec."), any track data that followed the inserted blank will be moved toward the end of the song.



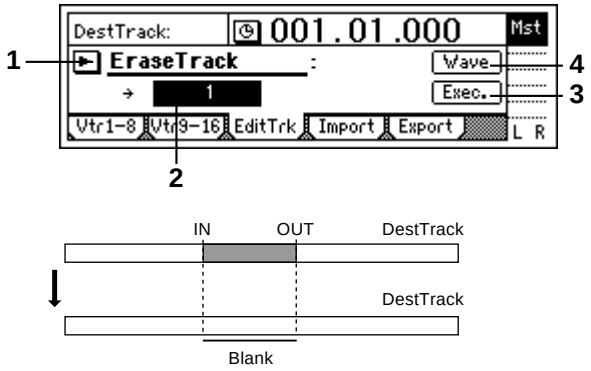
2. DestTrack.....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the insert destination track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. Exec. (Execute).....
Execute the track editing operation.

4. Wave .....
This area displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

EditType: "EraseTrack"
This operation erases the track data in the **IN**–**OUT** range of the erase destination track ("DestTrack"). When this is executed ("Exec."), the **IN**–**OUT** range will contain silence.



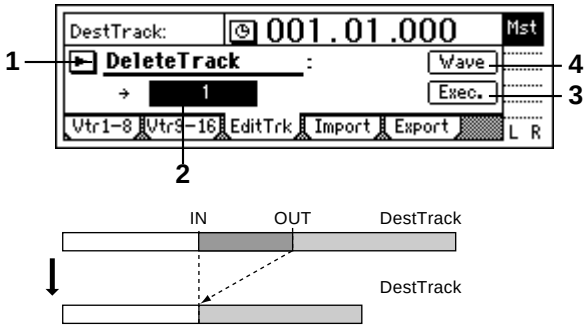
2. DestTrack.....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the erase destination track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. Exec. (Execute).....
Execute the track editing operation.

4. Wave .....
This displays the audio data of the track as a waveform. Here you can set the editing locations (IN, OUT, TO) more precisely. (→p.82 EditType: "CopyTrack")

EditType: "DeleteTrack"
This operation deletes the track data from the **IN**–**OUT** range of the delete destination track ("DestTrack"). When this is executed ("Exec."), the data of the **IN**–**OUT** range will be discarded, and any track data that followed the deleted range will be moved toward the beginning of the song.



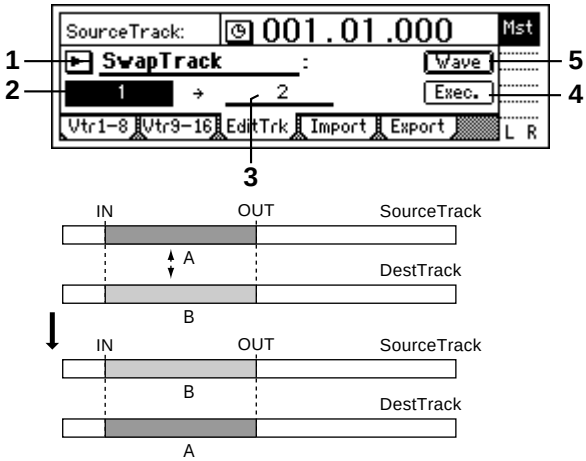
2. DestTrack.....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the track(s) from which data will be deleted.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. Exec. (Execute).....
Execute the track editing operation.

4. Wave .....
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

EditType: "SwapTrack"
This operation exchanges (swaps) the track data of the **IN**–**OUT** range of the swap source track ("SourceTrack") with the track data in the **IN**–**OUT** range of the swap destination track ("DestTrack").
When this is executed ("Exec."), the data in the **IN**–**OUT** ranges of the "SourceTrack" and "DestTrack" will be exchanged.



2. SourceTrack .....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the swap source track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. **DestTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the swap destination track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

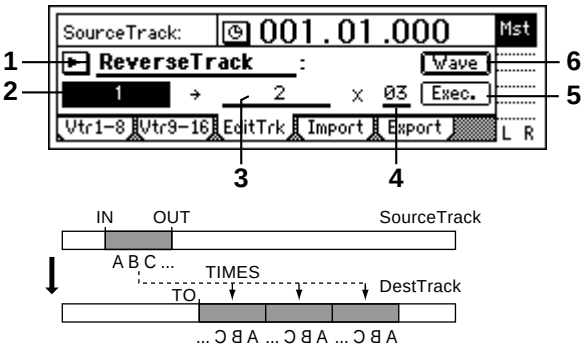
4. **Exec. (Execute) .....**
Execute the track editing operation.

5. **Wave .....**
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

EditType: "ReverseTrack"

This operation copies the track data of the **IN–OUT** range of the reverse source track ("SourceTrack") to the **TO** location of the destination track ("DestTrack") in reverse (flipped back-to-front). You can specify the number of times that the data will be copied.
When this is executed ("Exec."), the copied data will be reversed, so that the playback will be backward.

The specified range of the reverse destination track will be overwritten.



2. **SourceTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the reverse source track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. **DestTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the reverse copy destination track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

4. **Times..... [1...99]**
Specify the number of times that the data will be copied.

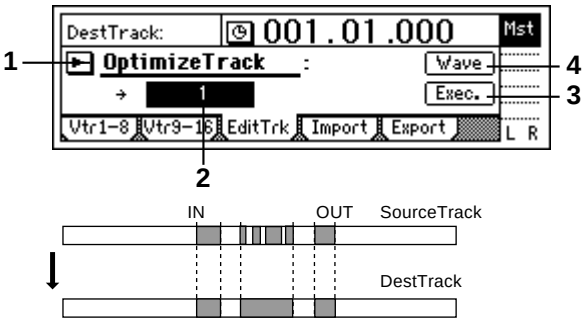
5. **Exec. (Execute) .....**
Execute the track editing operation.

6. **Wave .....**
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

EditType: "OptimizeTrack"

This operation optimizes the track data of the **IN–OUT** range of the optimize destination track ("DestTrack"). The D1600 will not generate unnecessary sound if the **IN–OUT** range contains unused blank portions. However in the case of brief blank portions that are close to the next audio event, the data will be generated as a single sound to avoid producing "DiskBusy" errors.

note By executing Optimize Track with **IN–OUT** set to the beginning and end of the song, you can ensure that the data will be accessed with optimal efficiency from the hard disk.



2. **DestTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the track that will be optimized.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. **Exec. (Execute) .....**
Execute the track editing operation.

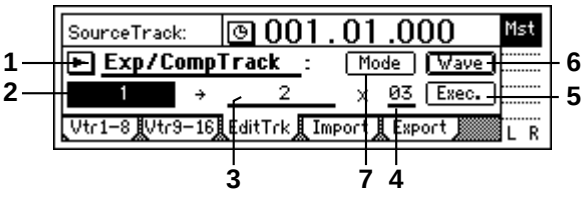
4. **Wave.....**
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

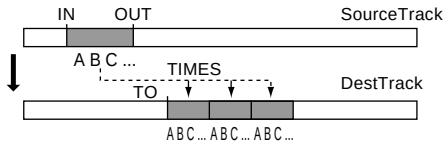
EditType: "Exp/CompTrack"

This operation expands or compresses the track data of the **IN–OUT** range of the expansion/compression source track ("SourceTrack"), places it in the **TO–END** range of the expansion/compression destination track ("DestTrack"), and copies it the specified number of times beginning at the TO location.

When this is executed ("Exec."), the expansion/compression destination track will be overwritten.

The available ratio of expansion/compression is limited, and if the **IN–OUT** duration is drastically different than the **TO–END** duration, an error message will appear when this is executed. In general, the **TO–END** time can be changed to **50–200%** of the **IN–OUT** time.





2. SourceTrack ..... [1...16, 1–2...15–16]
Select the expansion/compression source track.

note In the case of a 24 bit song, only tracks **7–8** can be selected.

3. DestTrack ..... [1...16, 1–2...15–16]
Select the expansion/compression copy destination track.

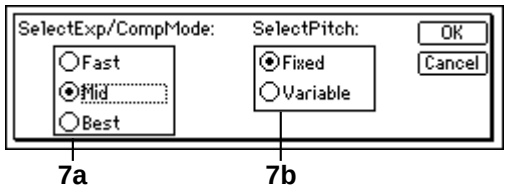
note In the case of a 24 bit song, only tracks **7–8** can be selected.

4. Times ..... [1...99]
Specify the number of times that the data will be copied.

5. Exec. (Execute) .....
Execute the track editing operation.

6. Wave .....
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "CopyTrack")

7. Mode .....
Select how the expansion/compression will be processed.
This will appear when you press the "Mode" button.

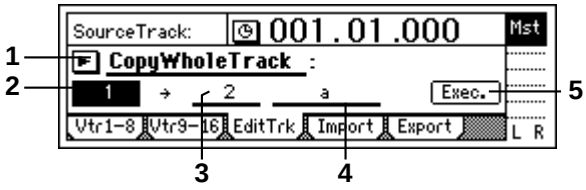


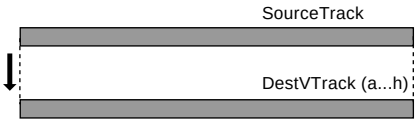
7a. SelectExp/CompMode..... [Fast, Mid, Best]
Specify the conversion mode for expansion/compression.
Fast: Processing speed will be given priority
Mid: Mid-way between "Fast" and "Best"
Best: Audio quality will be given priority
However if "SelectPitch" (7b) is set to "**Variable**," this setting will have no effect.

7b. SelectPitch ..... [Fixed, Variable]
Select the pitch at which the data will play back after expansion/compression has been performed.
Fixed: The pitch will remain the same
Variable: The pitch will be change
When you press the "OK" button, expansion/compression will be executed with the conversion mode that you selected. Press the "Cancel" button to cancel without executing.

EditType: "CopyWholeTrack"
This operation copies the track data from the beginning to the end of the copy source track ("SourceTrack"; the currently selected virtual track) to the specified virtual track of the copy destination track ("DestTrack").

When this is executed ("Exec."), the copy destination track will be overwritten.





2. SourceTrack .....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the copy source track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

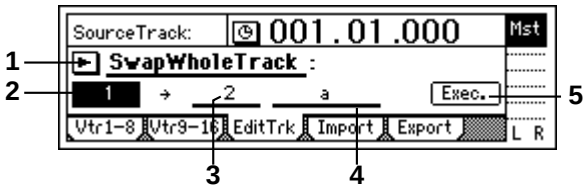
3. DestTrack .....
[1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]
Select the copy destination track.

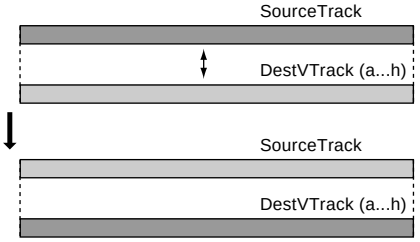
note In the case of a 24 bit song, only tracks **1–8** can be selected.

4. DestVTrack..... [a...h]
Select the virtual track of the copy destination track ("DestTrack") to which the data will be copied.

5. Exec. (Execute) .....
Execute the track editing operation.

EditType: "SwapWholeTrack"
This operation exchanges (swaps) the track data from the beginning to the end of the swap source track ("SourceTrack"; the currently selected virtual track) with the specified virtual track of the swap destination track ("DestTrack").
Use this operation when you wish to reorder the recorded tracks. When you have finished recording a song, this operation also provides a useful way to move the final data so that virtual track "**a**" is used for all tracks.
When this is executed ("Exec."), all data of the "SourceTrack" and "DestTrack" will be exchanged.





2. **SourceTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the swap source track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. **DestTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the swap destination track.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

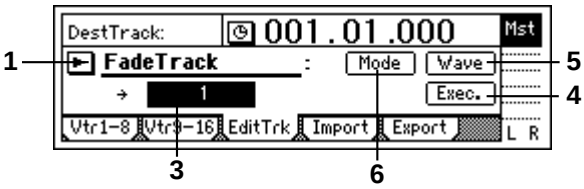
4. **DestVTrack .....[a...h]**
Select the virtual track of the swap destination track ("DestTrack") to which the data will be swapped.

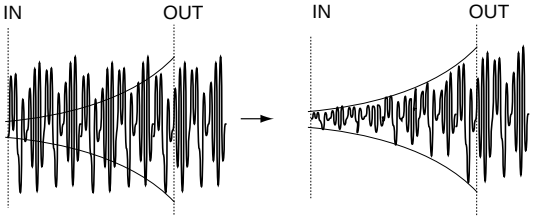
5. **Exec. (Execute) .....**
Execute the track editing operation.

EditType: "FadeTrack"

This operation fades-in or fades-out the track data in the **IN**–**OUT** range of the fade-in destination track ("DestTrack"). When this operation is executed, the audio data in the **IN**–**OUT** range will be smoothly faded to the level of the OUT time location.

When this is executed ("Exec."), the fade-in (fade-out) destination track will be overwritten.





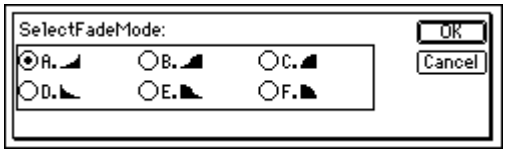
2. **DestTrack ..... [1...16, 1–2...15–16, 1–4...13–16, 1–8, 9–16, 1–16]**
Select the track to be edited.

note In the case of a 24 bit song, only tracks **1–8** can be selected.

3. **Exec. (Execute) .....**
Execute the track editing operation.

4. **Wave .....**
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "Copy-Track")

5. **Mode.....**
Select the fader curve for the fade-in or fade-out.



5a. SelectFadeMode ..... [A...F]

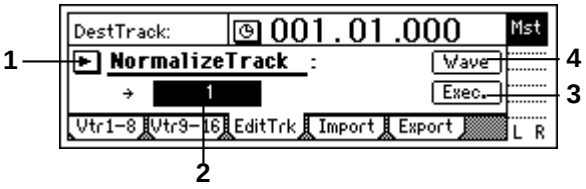
A type: This curve is ideal for conventional fade-in.
B type: This curve is ideal for creating cross-fades where two tracks are faded-in/out at the identical time location.
C type: This curve inverts the A curve, lengthening the sound that is heard.
D type: Fade-out using the A type curve.
E type: Fade-out using the B type curve.
F type: Fade-out using the C type curve.

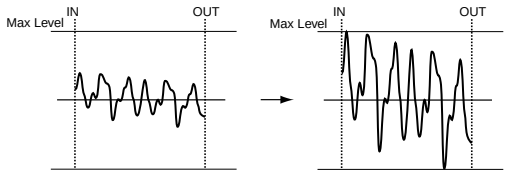
Press the **"OK" button** to finalize the selected fade type, or press the **"Cancel" button** to cancel the setting.

EditType: "NormalizeTrack"

If the recorded level is too low, this command can be used to boost the specified region (**IN**–**OUT**) of track data so that the peak level will be at maximum level before clipping.

The normalize destination track will be overwritten.





2. **DestTrack .....[1...16, 1–2...15–16]**
Select the normalize destination track.

note For a 24 bit song, only up to tracks **7–8** can be selected.

3. **Exec. (Execute) .....**
Execute the track editing command.

4. **Wave.....**
This displays the audio data of the track as a waveform. Here you can set the editing locations (**IN**, **OUT**, **TO**) more precisely. (→p.82 EditType: "Copy-Track")

P4 Import: Import a WAV file

A WAV file saved on a FAT 16 DOS format external SCSI drive can be pasted into a D1600 track. (→p.72 "Note when using DOS format disks")
You can also import this data into the clipboard, and paste it into a location other than the beginning of the track.

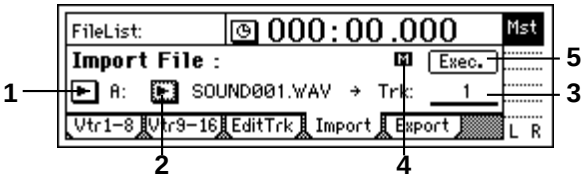
note For CD media, the D1600 supports WAV files saved on an **ISO9660 Level 1** format CD-ROM, CD-R, or CD-RW. For CD-ROM, CD-R, and CD-RW, sub-directories are also supported.

For SCSI drives other than CD-ROM, CD-R, and CD-RW, the D1600 supports only WAV files that are saved in the root directory of the first partition of FAT 16 format.

The D1600 can import WAV files of the following formats.
Sampling frequency: 44.1 kHz
Quantization: 8 bit, 16 bit, 24 bit
Number of channels: 1 (monaural), 2 (stereo)

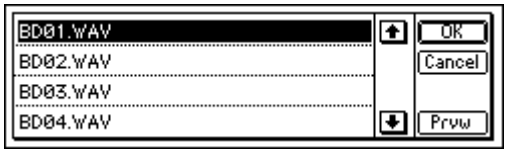
When this command is executed ("Exec."), the import destination track will be overwritten.

A certain amount of time is required when importing or exporting WAV files. Here are some example times when importing or exporting a five-minute 16 bit 44.1 kHz monaural WAV file from/to a Zip drive.
Importing: approximately 9 minutes 20 seconds
Exporting: approximately 10 minutes 30 seconds
* The processing time will differ depending on the format of the WAV file and on the SCSI device you are using.



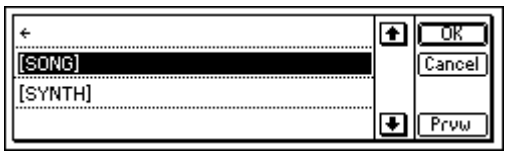
1. DriveList .....[A...G]
Select the drive. For details on the drive numbers, refer to "Drive ID" (→p.22).

2. WavFileList .....
Select the WAV file.

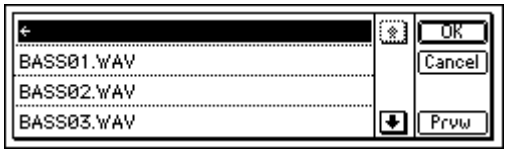


Press the "OK" button to finalize the selection, or press the "Cancel" button to cancel the selection.

note When importing from CD-ROM, CD-R, or CD-RW, sub-directories are also supported. Sub-directories are displayed as [...] in the WaveFileList screen.



To enter a sub-directory, select the desired [...] and press the "OK" button. To return, select "←" and press the "OK" button.



Prvw .....
You can preview the first two seconds of the selected WAV file.
If you select a WAV file of an unsupported format, one of the following error messages will appear.
SAMPLE RATE NOT 44.1k: This will appear if the sampling frequency of the WAV file is other than 44.1 kHz.
SAMPLE BIT NOT FIT: This will appear if the quantization of the WAV file is other than 8 bit, 16 bit, or 24 bit.
ILLEGAL WAV DATA: This will appear if the WAV file is unsupported for a reason other than the above.

3. DestTrack .....[1...16, 1–2...15–16, clip#]
Select the import destination track.
Clip# will be **1** if the selected WAV file is monaural, or **2** if the file is stereo.

4. FileType ..... (M, St)
This indicates whether the selected WAV file is monaural or stereo.
M: The selected WAV file is monaural.
St: The selected WAV file is stereo.

5. Exec. (Execute) .....
Execute the WAV file import command.

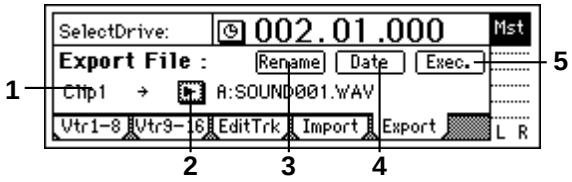
P5 Export: Export a WAV file

Audio track data copied to the clipboard of the D1600 can be exported to a WAV file (16 bit, 44.1 kHz, mono or stereo) on a FAT 16 DOS formatted external SCSI drive. (→p.72 "Note when using DOS format disks")

You can select whether clip board data in 24 bit mode will be exported as 16 bit or as 24 bit data. When exporting 24 bit clipboard data as 16 bit data, you can select whether **dithering** will be performed.

note If dithering is performed, quantization noise will be less obvious.

It is not possible to export to a CD device (CD-R, CD-RW).

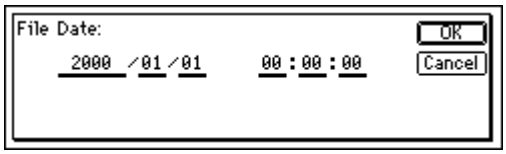


1. Clip# .....
This shows the state of the clipboard.
# indicates the number of tracks in the clipboard.
This command cannot be executed if the display is other than "Clip1" (monaural) or "Clip2" (stereo).

2. DriveList.....[A...G]
Select the drive. For details on drive numbers, refer to "Drive ID" (→p.22).

3. **Rename .....**
Press the "Rename" button to access the dialog box, and specify a name for the WAV file. Up to eight characters can be used for WAV file name.

4. **Date .....**
Input the date of the WAV file being exported. Press the "Date" button to access the dialog box, and specify the date and time at which the WAV file was created. Directly press the date or time field that you wish to change, and use the [VALUE] dial to modify the value.

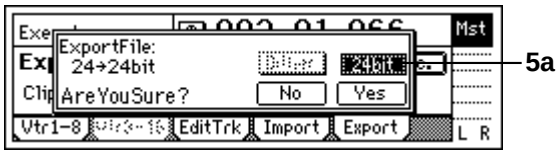


Press the "OK" button to finalize the setting. Alternatively, press the "Cancel" button to cancel any changes you made.

5. **Exec. (Execute) .....**
Execute the WAV file export.

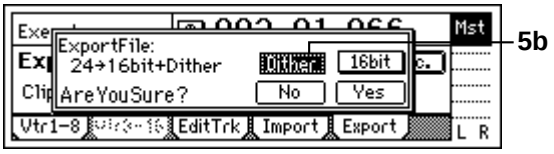
5a. Export Size .....[16bit, 24bit]

This can be selected only if the clipboard contains 24 bit data.
Specify whether the 24 bit data copied to the clipboard will be exported as a 16 bit WAV file or as a 24 bit WAV file.



5b. Dither SW ..... [ON, OFF]

This can be selected only for 24 → 16 bit.
Specify whether dithering will be performed when the 24 bit data copied to the clipboard is exported as a 16 bit WAV file.

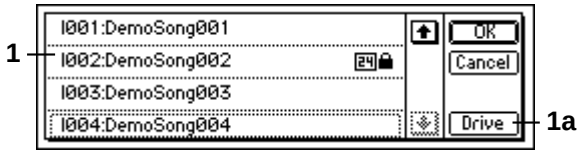


ON: Dithering will be performed in order to make quantization noise less obtrusive.
OFF: Dithering will not be performed.

5. SONG

P1 SelSong: Selecting a song

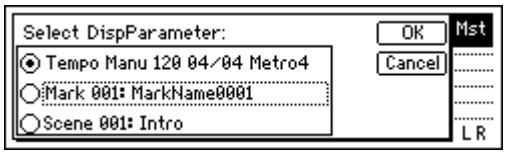
1. **SongNumber..... [I, A...G/001...100]**
Select the song.
The display shows the drive, song number, and song name.
If a 24 bit song is selected, the display will indicate "24." If the song is protected, the display will indicate " " (→p.60). If a song from a D12 playable disk is selected, the display will indicate " ."
You can press the "▶" button and choose from a list. If you wish to select a different drive, press the "Drive" button in this list and select the desired drive.



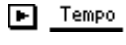
note You can also select songs by holding down the [STOP] key and pressing the [FF] key or [REW] key. (→p.22)

1a. Drive.....[I, A...G]
Select the drive.
When you press this button, a dialog box will appear. Select the drive, and press the "OK" button. (→p.22)

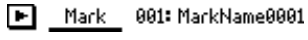
2. **Select DispParameter.....[Tempo, Mark, Scene]**
Select whether the LCD display will show the current tempo, mark, or scene settings.
Press the "▶" button, and you will be able to select from a list.



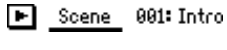
Tempo: The display will show the tempo source, tempo, time signature, and rhythm of the song.



Mark: The display will show the number and name of the mark at or immediately before the current location in the song.

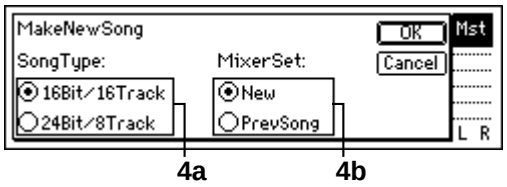


Scene: The display will show the number and name of the scene for the current location in the song.



3. Rename.....
Press the "Rename" button to access the dialog box, and modify the song name. A name of up to sixteen characters can be input. (→p.21)

4. New.....
This creates a new song following the last song of the currently selected drive.
Press the "New" button to access the dialog box.



Set "SongType" and "MixerSet," and press the "OK" button, to create the new song. If you press the "Cancel" button, no song will be created.

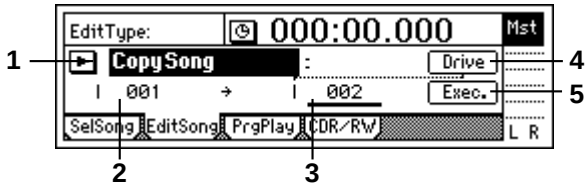
4a. SongType .....[16Bit/16Track, 24Bit/8Track]
16Bit/16Track: Create a song for 16 bit recording/playback. Tracks 1–16 can be used. A maximum of eight tracks can be recorded simultaneously.
24Bit/8Track: Create a song for 24 bit recording/playback. Tracks (1–8) can be used. Tracks 9–16 are not available. A maximum of four tracks can be recorded simultaneously.

note When audio data is transferred to a 16 bit song (→p.82 EditType: "CopyTrack"), it will be handled as 16 bit data.

✍ The "SongType" (Bit/Track) setting can be changed only when creating a new song.

4b. MixerSet.....[New, PrevSong]
Select the mixer settings for the new song.
New: New settings will be used.
PrevSong: The mixer settings of the currently selected song will be used.

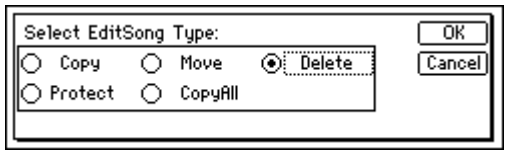
P2 EditSong: Song editing



note The song affected by editing will be the currently selected song. (However the "**CopyAllSong**" operation will affect all songs.)

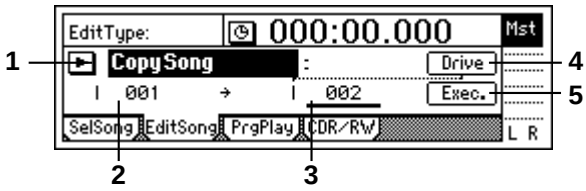
✍ Undo is not available after these operations.

1. EditType .....[CopySong, MoveSong, DeleteSong, ProtectSong, CopyAllSongs]
Select the song editing operation.
Press the "▶" button, and you will be able to select an editing operation from the following dialog box.



○ **On this and the following pages, the items in the screen are explained separately for each of these types.**

EditType: "CopySong"
The currently selected song will be copied to the drive and song number you specify.



2. SourceSong .....(I, A...G/001...100)
This displays the copy source drive and the song number.
If you wish to change this, use the [SONG] "SelSong" tab page to make your selection.

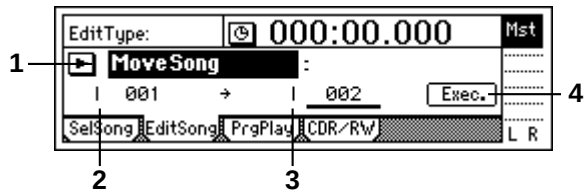
3. DestSong .....[(I, A...G/001...100)]
This displays the copy destination drive, and lets you select the song number.
You can select song numbers "**001**"–"**existing song numbers + 1**". Use "Drive" to select the drive.

4. Drive .....[I, A...G]
Select the copy destination drive.
When you press this button, a dialog box will appear. Select the drive, and press the "OK" button. (→p.22)

5. Exec. (Execute) .....
Execute the copy operation.
When you execute the operation, the source song will be copied to the destination song number ("DestSong"). If "DestSong" is an existing song number, songs at and following that number will be renumbered upward by one; no songs will be overwritten.

✍ Undo is not available for this operation.

EditType: "MoveSong"
The currently selected song will be moved to a different song number within the same drive.



2. SourceSong .....(I, A...G/001...100)
This displays the move source drive and the song number.

3. **DestSong .....[(I, A...G/001...100)]**
This displays the move destination drive, and lets you select the song number.
You can select song numbers "**001**"–"**existing song numbers**".

4. **Exec. (Execute) .....**
Execute the move operation.
If the selected move destination number ("DestSong") is higher than the move source number ("SourceSong"), executing this operation will cause the "DestSong" and the preceding song numbers to be renumbered downward by one. If the move destination number is lower than the move source number, the "DestSong" and following song numbers will be renumbered upward by one. No songs will be overwritten.

Undo is not available for this operation.

EditType: "DeleteSong"
The currently selected song will be deleted.

2. **DestSong .....[(I, A...G/001...100)]**
This displays the drive, song number, and name of the song that will be deleted. If you wish to change this, use the [SONG] "SelSong" tab page to make your selection.

3. **Exec. (Execute) .....**
Execute the delete operation.
When you execute, the "DestSong" song will be deleted, and subsequent songs will be renumbered downward by one.

Undo is not available for this operation.

EditType: "ProtectSong"
The currently selected song will be protected, so that writing, and deletion are prohibited. This lets you prevent a completed song from accidentally being overwritten and deletion.

No writing and delete operations can be performed when protect is on, including recording, track editing, and registering a scene.

note When protect is turned on, the settings of a song will also be stored. Fader and EQ etc. will reflect your editing, but will not be stored.

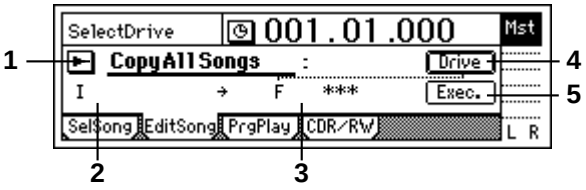
2. **DestSong .....[(I, A...G/001...100)]**
This displays the drive, song number, and name of the song that will be protected. If you wish to change this, use the [SONG] "SelSong" tab page to make your selection.

3. **Exec. (Execute) .....**
Execute the protect operation.
Each time you execute, protect will be turned on or off.

Undo is not available for this operation.

4. **Protect On/Off Mark .....[On, Off]**
A "lock" symbol will be displayed when protect is **On**, and will be hidden when protect is **Off**. The on/off setting is switched by the "Exec." button.

EditType: "CopyAllSongs"
All songs of the drive where the currently selected song is located will be copied.



2. **SourceDrive ..... (I, A...G)**
This displays the copy source drive.

3. **DestDrive ..... [(I, A...G)]**
This displays the copy destination drive.
Use "Drive" to select the drive.

4. **Drive.....[I, A...G]**
Select the copy destination drive.
When you press this button, a dialog box will appear. Select the drive, and press the "OK" button.

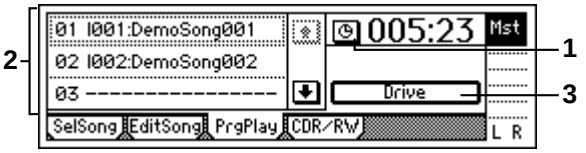
5. **Exec. (Execute) .....**
Execute the copy operation.
When you execute this command, the songs will be copied following the last song on the copy destination drive ("DestSong"). No songs will be overwritten.

Undo is not available for this operation.

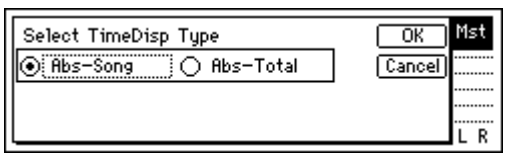
P3 PrgPlay: Program playback of songs

You can create a program play list to arrange songs in a desired order, and play them consecutively.

For settings and playback procedure, refer to p.33.



1. **Select TimeDisp Type.....[Abs–Song, Abs–Total]**



Select the type of counter display.

Abs–Song: The elapsed time of the individual song will be displayed.
Abs–Total: The elapsed time of the entire program will be displayed.
If you are satisfied with the setting you selected, press the "OK" button. To cancel, press the "Cancel" button.

2. ProgramPlay List..... [01…99]
Here you can arrange songs in a list.
The songs will be played in order, starting at the top. To select a different drive, press the "Drive" button.
From the left, this display shows the play list number, drive, song number, and song name.
If the list contains a play list number without a song, that number will be skipped, and the next song in the play list will be played.

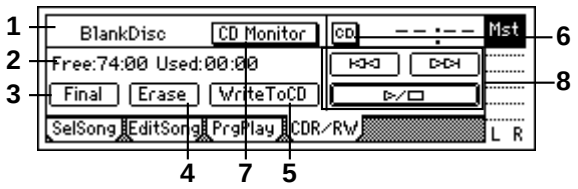
3. Drive..... [I, A…G]
Select the drive.
When you press this button, a dialog box will appear. Select the drive, and press the "OK" button. (→p.22)

P4 CDR/RW: Creating and playing a CD-R/RW

You can produce an audio CD if a CD-R (CD Recordable) or CD-RW (CD Re-Writable) drive such as the **CDRW-2** (sold separately) is installed in the D1600, or if a recommended CD-R or CD-RW drive is connected to the [SCSI] connector. (→p.49)
The first through last events of tracks 1 and 2 of the currently selected song will be written to the CD-R/RW. Here you can also play back the CD-R/RW that you created.

Some audio CD players are unable to play back a CD-R/RW disc.

Some audio CD players are unable to play the first several hundred milliseconds at the beginning of an audio track. For this reason, we recommend that you create a blank region of 300–600 msec at the beginning of tracks 1 and 2 when producing an audio CD on the D1600. (→p.52 Insert Track)



1. CD-R/RW Infomation ..... (Trk01...99, BlankDisc, NoAudioTracks, NoDrive)
This shows the song on the CD-R/RW that will be played.
Trk01...99: The song number within the CD-R/RW disc.
BlankDisc: An unwritten CD-R/RW disc is inserted.
NoAudioTracks: Either a CD-R/RW disc has not been inserted, or no playable audio tracks were found on the disc.
NoDrive: No drive is connected.

2. Size/DeviceType ..... (Free, Used/R, RW, DA)
This shows the time available on the CD-R/RW for writing, and the type of disc.

Time display
Free: Display the free time on the disc.
Used: Display the used time on the disc.
The times are displayed in minutes and seconds.

Disc type
R: The disc has been detected as a CD-R.
This corresponds to the following cases.
- Drive = CD-R, Disc = CD-R
- Drive = CD-RW, Disc = CD-R

RW: The disc has been detected as a CD-RW.
This corresponds to the following case.
- Drive = CD-RW, Disc = CD-RW

DA: The disc has been detected as an audio CD.
This corresponds to the following cases.
- A finalized CD-R created on the D1600 etc.
- A finalized CD-RW created on the D1600 etc.
- An audio CD

3. Final(Finalize).....
Execute the Finalize operation.
In order for a CD-R/RW disc created on the D1600 to be playable on an audio CD player, the Finalize operation must be executed.

Finalize can be executed only once on CDRs. After a disc has been finalized, it is no longer possible to write additional songs on that disc. For this reason, you should press the "Final" button to execute Finalize only after you have finished writing all the songs you intend to write on that disc. When using CD-R/RW disks you can execute the undo function for either audio or data backup. Each CD-R/RW can contain only one type of data, either audio or backup for this function to work correctly.

4. Erase.....
Erase the data that was written to the CD-RW.

This cannot be executed on a CD-R.
Erased data cannot be recovered.

5. WriteToCD .....
Execute writing to the CD-R/RW.
When you press the "WriteToCD" button, a message of "Obey Copyright Rules" will appear. Carefully read the owner's manual section "COPYRIGHT WARNING" (→p.1), and use this function only if you accept the terms.

5a. Write Speed.....[2x, 4x]
Select the speed at which the CD will be written.
4X: Write at quadruple speed.
2X: Write at double speed.
When the display asks "Are You Sure?," press the "Yes" button to begin writing.

If you use "4X" to write, you must use a drive that supports 4X speed writing.

note If you press the "Abort" button while writing, writing will be stopped. However, the disc will be incomplete.

6. CD.....[Abs–Song, Abs–Total]
Select the display method for the CD-R/RW playback counter.
Abs–Song: Display the elapsed time for a single song.
Abs–Total: Display the elapsed time for the entire disc.

7. CD Monitor .....
This specifies whether the CD audio output will be sent to the monitor bus when an audio CD is placed in the internal CD-R/RW drive.
On: The sound of an audio CD placed in the internal CD-R/RW drive will be sent to the monitor bus. At this time, other audio will not play from the monitor out.
Off: CD monitoring will be off. The sound of the internal CD-R/RW will not be sent to the monitor.

note If the audio output of the internal CD-R/RW drive has been assigned to a mixer channel in the [INPUT] tab page, you can listen to the sound of the CD even if "CD Monitor" is turned off. In this case, you will hear the sound that has been routed through the mixer (with EQ and effects, etc.).

8. CD-R/RW transport keys
Use these keys to play, stop, and select songs on an audio CD you created.
⏮ : If you are in the middle of a song, this key moves to the beginning of that song. If you are at the beginning of a song, this key moves to the beginning of the previous song.
⏭ : This key moves to the beginning of the next song.
⏯ : This key alternately starts/stops playback.
The playback sound will be output from the audio outputs of the CD-R/RW drive.

6. STORE

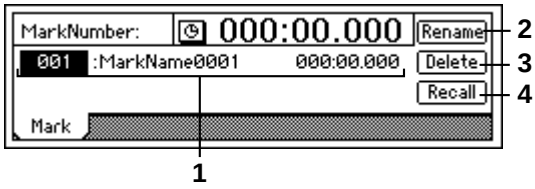
You can store a time location for a registration to a locate, scene, or mark.
When you press the [STORE] key the location is put into a memory buffer, and can be registered by pressing one of the registration destination keys: (IN/LOC1, OUT/LOC2, TO/LOC3, or END/LOC4). If you press the [STORE] key once again instead of pressing a registration destination key, the store operation will be cancelled. For details on these functions and on the registration procedure, refer to Locate (→p.35), Scene (→p.39), and Mark (→p.36).

7. MARK

You can register a specific time location in a Mark, and then jump instantly to that location when desired. Since you can assign a name to each mark, you can use them to indicate sections within your song. (→p.36)

note A maximum of 100 marks can be registered in each song.

P1 Mark: Editing marks



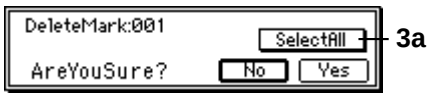
1. MarkNumber .....[001…100]
Select the mark number. Beside the mark number, the display shows the name of the mark, and the registered time location.

note Mark numbers are updated in order of their time location.

2. Rename .....
Modify the name of the mark.
Select the mark whose name you wish to modify, press the "Rename" button to access the dialog box, and modify the name. You can input a name of up to sixteen characters. (→p.21)

3. Delete .....
Delete a mark.

The Undo function is not available after deleting a mark.



3a. SelectAll.....[On, Off]
Select all marks for deletion.
SelectAll **On**: All marks will be subject to deletion. The mark number will be displayed as "***."
SelectAll **Off**: The single mark selected by "MarkNumber" will be selected for deletion.

4. Recall.....
Recall the mark selected by "MarkNumber," and move the current time to that location.

8. SCENE

The mixer settings that you adjust can be registered at a desired time location as a Scene, and used to automatically change the mixer settings as the song plays (when "SceneRead" is turned "On"). Scenes can also be used as general-purpose settings, and recalled and used when desired. (→p.39)
Up to 100 scenes can be registered in each song.

The following settings can be registered in a scene.

MixerChannel
EQ, EffectSend1, 2, AuxSend, Pan/Balance, ChFader, PairOn/Off

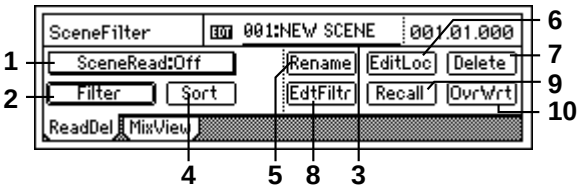
InsertEffect (only when Assign is "Trk")
EffectType, InsertTo, EffectNumber

MasterEffect
EffectNumber, EffectReturn

FinalEffect
EffectNumber

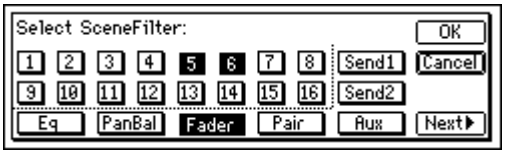
Filters are provided for each of these parameter groups, allowing you to select whether or not they will be registered or recalled (→"Filter").

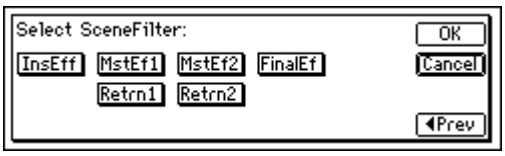
P1 ReadDel: Scene playback on/off and editing



1. SceneRead ..... [On, Off]
Turn scene playback on/off.
SceneRead:On **On**: Scene playback is enabled.
During playback, each scene will be recalled when its registered time is reached, and the mixer settings will change automatically.
When this is "**On**," the [SCENE] key will light.
SceneRead:Off **Off**: Scene playback is disabled.
You can freely recall scenes as general-purpose settings without regard to their time location. (→p.40 "Recalling a scene")

2. Filter .....
You can use filters to disable changes for specified mixer settings (parameters) when registering or recalling scenes.
Here you can select which mixer settings (parameters) will be disabled.





On: The filter will be on for that channel/parameter, and the scene settings will be disabled.
Off: The filter will be off, and the scene settings will be enabled.
When you register a scene, the filter settings act as a registration filter for that song.
Use the filter while registering if you wish to preserve some of the settings from the previous scene.
For example, suppose that you turned the filter "On" for the "Pan" of channels 1 and 2, and registered the current settings as scene "002" in the middle of the song. Then for playback, suppose you turned the "EQ" filter "On."
Turn on scene playback and play back from the beginning of the song. When playback reached the location of scene "002," pan will remain at the settings of scene "001" (registered at the beginning of the song), since scene "002" does not contain pan settings. Other settings will change to the values of scene "002." Since EQ is being played back through the playback filter, the values registered in the scenes from the beginning of the song will not be used; the current EQ settings will be maintained.

3. SceneNumber ..... [001...100]
This recalls the mixer settings of a scene to the current time location.
This is also used to recall a scene when you wish to modify its name or to change its time location.
The time location at which the scene is registered is shown beside "SceneNumber."
If "SceneRead" (P1-1) is "**Off**," you can select any desired scene. If this is "**On**," the scene for the current time will be selected, and cannot be chosen manually.

4. Sort .....
Sort scenes in order of time.
Normally, scenes are arranged in the order in which they were registered, but you can sort them in ascending order of registered time.

Undo is not available after executing Sort.

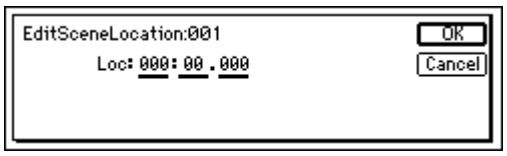
5. Rename .....
This lets you modify the name of a scene.
Use "SceneNumber" to recall the scene whose name you wish to modify, press the "Rename" button to access the dialog box, and modify the name. A name of up to sixteen characters can be used. (→p.21)
If the [SONG] "SelSong" tab page item "Select Disp-Parameter" is set to "**Scene**," the scene name will be displayed in that page. (→p.88)

6. EditLoc

This lets you change the registered time of a scene. Use "SceneNumber" to recall the scene whose location you wish to change. Press the "EditLoc" button to access the dialog box, and modify the location of the scene.

Use the cursor to select the time that you wish to modify, and use the [VALUE] dial to modify the time.

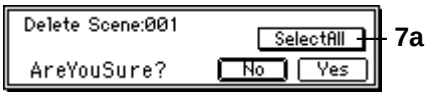
Press the "OK" button to finalize the change, or press "Cancel" button to cancel the change.



7. Delete

This lets you delete a scene.

The Undo function is not available after you delete a scene.



7a. SelectAll.....[On, Off]

This selects all scenes for deletion.

SelectAll **On**: All scenes will be subject to deletion. The scene number will be displayed as "***."

SelectAll **Off**: The single scene selected in "SceneNumber" will be subject to deletion.

8. EditFilter

You can view or edit the filter settings that are registered in a scene.

The filter settings registered in the "Filter" tab page can be viewed or edited.

Even when a scene is stored with filtering applied, it actually saves all the parameter values at the time of storing, together with the state of the filter. By editing the filter settings in this page, you can revert to the actual parameter settings of the time that the scene was stored.

9. Recall

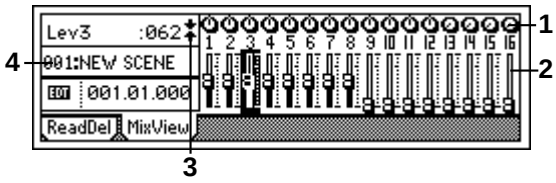
This recalls the settings that are registered in a scene.

If you recall a scene and edit the EQ etc., pressing the "Recall" button to recall it will recall the settings prior to editing (i.e., the mixer settings that were registered in the scene).

10. OvrWrt

This overwrites the current mixer settings onto the currently selected scene number. Use this when you wish to make detailed adjustments to the scene, or to replace it with a different scene.

P2 MixView: Pan/fader scene display



1. Pan..... (Pan1…Pan16)

This shows the currently selected pan settings.

When you select an icon, the channel number and setting value will be displayed in the upper left.

2. Level..... (Lev1…Lev16)

This shows the currently selected channel fader settings.

When you select an icon, the channel number and setting value will be displayed in the upper left.

3. Pan/fader guide ..... [↓ ↓ ↓ ‡ ↑ ↑ ↑ → → → ‡ ← ← ←]

These symbols show the difference between the actual fader or pan locations and the values that are registered in the scene.

When a scene is recalled, the current position of the faders may differ from the values registered in the scene. In this case, selecting the item that you wish to adjust will cause an indicator symbol to appear, showing the approximate difference between the internal setting value and the control.

Faders

↓ : The fader position is more than 51 steps above the internal value.

↓ : The fader position is between 21–50 steps above the internal value.

↓ : The fader position is between 1–20 steps above the internal value.

‡ : The fader position matches the internal value.

↑ : The fader position is between 1–20 steps below the internal value.

↑ : The fader position is between 21–50 steps below the internal value.

↑ : The fader position is more than 51 steps below the internal value.

Pan

→ : The pan knob is more than 51 steps to the left of the internal value.

→ : The pan knob is between 21–50 steps to the left of the internal value.

→ : The pan knob is between 1–20 steps to the left of the internal value.

‡ : The pan knob matches the internal value.

← : The pan knob is between 1–20 steps to the right of the internal value.

← : The pan knob is between 21–50 steps to the right of the internal value.

← : The pan knob is more than 51 steps to the right of the internal value.

4. SceneNumber.....[001…100]

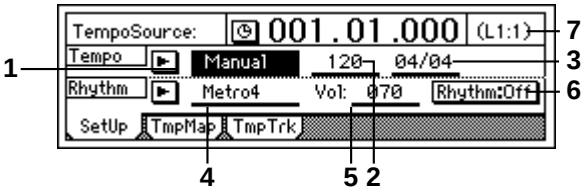
This recalls the mixer settings of a scene to the current time location. (→p.93)

9. TEMPO/RHYTHM

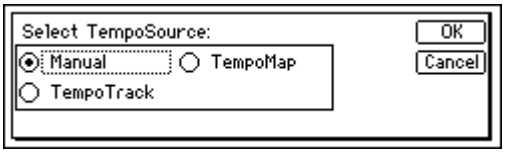
Here you can make tempo, time signature, and rhythm (metronome) settings for a song. When the counter is displaying "MBT" (measures, beats, and 1/96th of a beat) (→p.75), it will operate according to the specified tempo.

note Tempo/rhythm can also be viewed in the [SONG] "SelSong" tab page (→p.88).

P1 SetUp: Tempo and rhythm settings



1. **TempoSource .....[Manual, TempoMap, TempoTrack]**
Specify the tempo source.
Press the "▶" button, and you can select from a dialog box.



Manual: The tempo will follow the "Tempo" (→P1-2) and "Beat" (→P1-3)settings. It will not be possible to change the tempo, time signature, and rhythm pattern automatically as the song progresses.
TempoMap: The tempo, time signature, and rhythm pattern will change automatically as the song progresses, as directed by the tempo map. The tempo map can be created in the "TmpMap" tab page.
TempoTrack: The recorded tap tempo or MIDI Clock will be used. Use the "TmpTrack" tab page to record a tap tempo or tempo data from a sequencer, and select "**TempoTrack**" here.
The time signature will follow the settings created in the "TmpMap" tab page. For details refer to p.62.

note The "**TempoTrack**" can be selected after it is created.

2. **Tempo .....[40…240, (***)]**
Specify the tempo that will be used when "TempoSource" is set to "**Manual**." In the case of "**TempoMap**," this will show the current tempo created in the "TmpMap" tab page. In the case of "**TempoTrack**," this will show "***."
The units are ♩=**40–240**.

3. **Beat .....[01/04…16/16]**
Specify the time signature that will be used when "TempoSource" is set to "**Manual**." In the cases of "**TempoMap**" and "**TempoTrack**," this will show the time signature corresponding to the current time as specified in the "TmpMap" tab page.

4. **SelRhythm .....[(Rhythm Pattern List)]**
Specify the rhythm parameter that will be used when "TempoSource" is set to "**Manual**." In the cases of "**TempoMap**" and "**TempoTrack**," this will show the rhythm(→P1-2) corresponding to the current time as specified in the "TmpMap" tab page. Press the "▶" button, and select a pattern from a dialog box. The rhythms that can be selected will depend on the "Beat." (→p.146)

5. **RhythmVol .....[000…100]**
Specify the volume of the rhythm.
When the [SOLO/MONITOR] "Monitor" tab page "Rhythm" button is turned OFF, this volume is sent to the master LR bus. When the button is turned ON, it is sent to the monitor LR bus.

6. **Rhythm .....[On, Off]**
Turn the rhythm on/off.
You can specify whether or not the rhythm will play during recording and playback.
Rhythm:On **On**: The rhythm will play.
The [TEMPO/RHYTHM] key LED will light.
Rhythm:Off **Off**: The rhythm will not play.

Be aware that during bounce recording, the rhythm will be recorded if this setting is "**On**."

The rhythm that is input for [INPUT] "Ch1–8" and "Ch9–16" tab page ("**RhythmL**" and "**RhythmR**") will sound during recording or playback whether this setting is **On** or **Off**.

If the [SETUP] "TmpMap" tab page "Rhythm" parameter is "**On**," the rhythm will sound as long as this page is displayed, even if the recorder is stopped. At this time, the rhythm will continue sounding even if you select the "METER/TRACK VIEW" page.

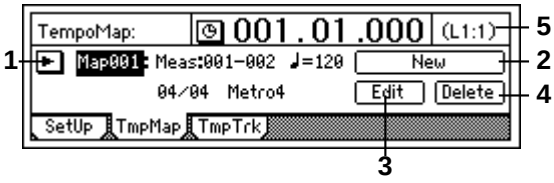
7. **Pattern Length, Pattern Position .....**
This shows the length (number of measures) of the rhythm pattern selected by "SelRhythm," and the measure that is currently playing.
Example: (L4:1)... currently playing measure 1 of a four-measure pattern

P2 TmpMap: Editing the tempo map

By creating a tempo map, you can cause the tempo, time signature, and rhythm pattern to change while the song is recorded or played back.

For details on creating a tempo map, refer to p.62.

note Changes in tempo, time signature, or rhythm can be made only at the beginning of a measure.

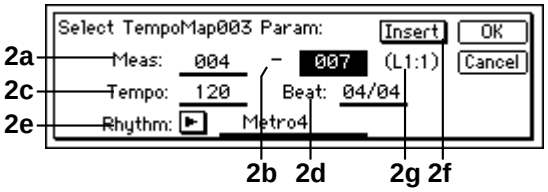


1. **TempoMap.....[001…200]**
This is the number of the selected tempo map.

The starting measure, ending measure, tempo, time signature, and rhythm pattern of this tempo map are shown at the right.
Press the "▶" button and select a tempo map from a dialog box.

When "TempoSource" (→P1-1) is "**Manual**," it is not possible to select "TempoMap."

2. New .....
Create a new tempo map.
When you wish to add a tempo map in the middle of the song, create a new tempo map.
The following "Select TempoMap*** Param" dialog box will appear.



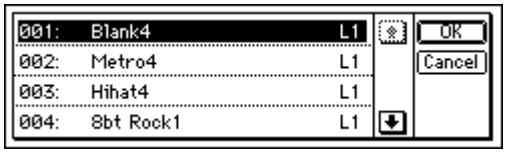
2a. StartMeas ..... [001...999]
Specify the starting location of the tempo map that will be created.
This is specified in units of a measure.

2b. EndMeas..... [001...999]
Specify the ending location of the tempo map that will be created.
This is specified in units of a measure.

2c. Tempo .....[40…240]
Specify the tempo. The units are ♩=40–240.

2d. Beat..... [01/04…16/16]
Specify the time signature.

2e. Rhythm ..... [(Rhythm Pattern List)]
Specify the rhythm. If you wish to specify a period of silence, you can select a silent rhythm.
Press the "▶" button and select a rhythm from a dialog box.
The rhythms that can be selected will depend on the "Beat" setting. (→p.146)

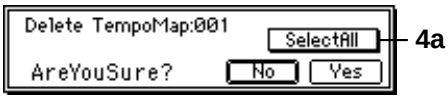


2f. Insert.....[On, Off]
On: The new tempo map will be created in Insert mode, inserting the tempo map.
Off: The new tempo map will be created in Overwrite mode, overwriting the existing tempo map.

2g. Pattern length, Pattern position .....
This displays the number of measures (length) for each rhythm selected by "SelRhythm," and the measure within that length that is being played.

3. Edit.....
Here you can edit the settings of a tempo map. Select this when you wish to modify an existing map. Use "TempoMap" to select the map that you wish to modify, and then press this button.
The "Select TempoMap*** Param" dialog box will appear, and you can set the desired values. (→P2-2 "New")

4. Delete .....
This deletes a tempo map.



4a. SelectAll .....[On, Off]
All tempo maps will be subject to deletion.
SelectAll **On**: All tempo maps will be subject to deletion. The tempo map number will be shown as "***."
SelectAll **Off**: The single tempo map selected by "TempoMap" will be subject to deletion.

All tempo maps following the deleted tempo map will be moved forward.

5. Pattern Length, Pattern Position .....
This shows the number of measures (length) of the pattern selected by "SelRhythm," and the measure number that is currently playing.

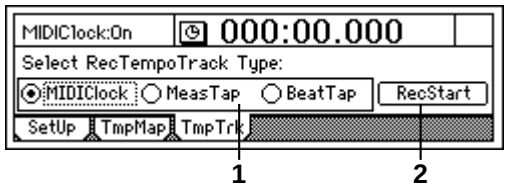
P3 TmpTrk: Create a tempo track

The tempo track can be recorded in two ways.

- By recording MIDI Clock
- By recording tap tempo

The first method is used to synchronize the D1600 to data created on an external sequencer.
The second method is used when you do not know the tempo of audio data recorded on the D1600 (for example if you recorded from a CD), but would like to manage the data and edit tracks in units of measures.
For the procedure, refer to p.63.

Since these two types of tempo tracks are recorded in the same area, it is not possible for both tempo tracks to exist simultaneously.
If memory becomes full during recording, recording will end.



1. Select RecTempoTrack Type..... [MIDIClock, MeasTap, BeatTap]
Select the type of tempo track.
MIDIClock: The tempo track will be created by recording MIDI Clock data from a song that was created on an external sequencer.
MeasTap: The tempo track will be created by recording taps at the beginning of each measure.
BeatTap: The tempo track will be created by recording taps at the beginning of each beat.

2. RecStart .....
Begin recording the tempo track.

10. IN/LOC1, OUT/LOC2, TO/LOC3, END/LOC4

If locations in the song have been registered to the [IN/LOC1], [OUT/LOC2], [TO/LOC3], and [END/LOC4] keys, you can use them to perform the following functions.

- Locate point (→p.35)
  Press each key to move to the registered location.
- Loop playback in/out points (→p.33)
- In/out points for auto-punch recording (→p.31)
- Editing locations for track editing (→p.51)
- In-out playback
  With this function, you can hold down the [IN/LOC1] key and press the [OUT/LOC2] key to playback from the **IN** time registered in the [IN/LOC1] key to the **OUT** time registered in the [OUT/LOC2] key. This provides a convenient way to play back the **IN**–**OUT** range so that you can check its contents.

Locate functions

IN/LOC1

The following time location registered to the [IN/LOC1] key.

- Locate point 1
- Punch-in time for auto-punch recording
- Playback start time for loop playback
- Playback start time for in-out playback
- The following times for track editing operations
  Copy source start time for "CopyTrack"
  Start of blank insert location for "InsertTrack"
  Start of erased region for "EraseTrack"
  Start of deleted region for "DeleteTrack"
  Start time of swap source and swap destination for "SwapTrack"
  Start of reversed region for "ReverseTrack"
  Start of expanded/compressed region for "Exp/CompTrack"
  "OptimizeTrack" start time
  "FadeTrack" start time
  "NormalizeTrack" start time

OUT/LOC2

The following time location registered to the [OUT/LOC2] key.

- Locate point 2
- Punch-out time for auto-punch recording
- Playback end time for loop playback
- Playback end time for in-out playback
- The following times for track editing operations
  Copy source end time for "CopyTrack"
  End of blank insert location for "InsertTrack"
  End of erased region for "EraseTrack"
  End of deleted region for "DeleteTrack"
  End time of swap source and swap destination for "SwapTrack"
  End of reversed region for "ReverseTrack"
  End of expanded/compressed region for "Exp/CompTrack"
  "OptimizeTrack" end time
  "FadeTrack" end time
  "NormalizeTrack" end time

TO/LOC3

The following time location registered to the [TO/LOC3] key.

- Locate point 3
- The following times for track editing operations
  Copy destination time for "CopyTrack"
  Reverse copy destination time for "ReverseTrack"
  Start time + copy destination time of expanded/compressed data for "Exp/CompTrack"

END/LOC4

The following time location registered to the [END/LOC4] key.

- Locate point 4
- The following time for track editing operations
  End time of expanded/compressed data for "Exp/CompTrack"

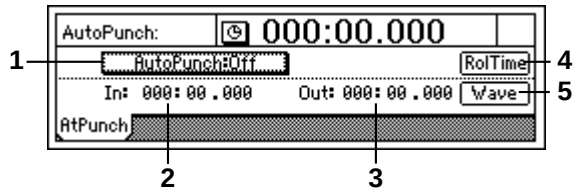
11. AUTO PUNCH

P1 AtPunch: Settings for auto punch-in/out recording

Auto punch-in/out recording is a function that automatically starts recording (punch-in) and stops recording (punch-out) at the time locations you specify beforehand.

If you record when "AutoPunch" is "**On**," punch-in/out recording will occur automatically.

note By turning the [RHSL] key "**On**," you can rehearse auto punch-in/out recording (i.e., practice without actually recording anything). (→p.112)



1. AutoPunch .....[On, Off]
Set the auto punch-in/out recording function on/off.

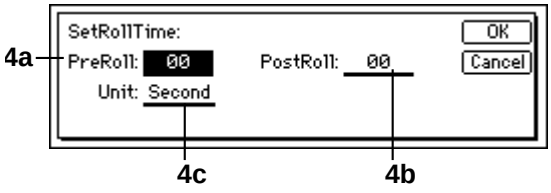
AutoPunch:On **On**: When you record, auto punch recording will occur. When "**On**," the [AUTO PUNCH] key will light.
When you begin recording, the song will start at the pre-roll time before the registered time (**IN**), recording will occur for the recording region (**IN**–**OUT**), and playback will stop after the post-roll time. (→"RolTime")

AutoPunch:Off **Off**: When you record, recording will occur normally.

2. In ..... (000:00.000…)
This shows the auto punch-in time (where recording will begin).
To set this time location, use the [STORE] key and [IN/LOC1] key, or use "Wave."

3. Out..... (000:00.000…)
This shows the auto punch-out time (where recording will end).
To set this time location, use the [STORE] key and [OUT/LOC2] key, or use "Wave."

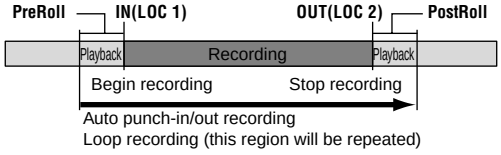
4. RolTime .....
Specify the pre-roll and post-roll.
When using auto punch recording, you can specify a **pre-roll** time so that you can be ready to start recording at the punch-in (**IN**) point. Set the **post-roll** time so that you can confirm the transition from the end of recording (**OUT**) to the material that follows.



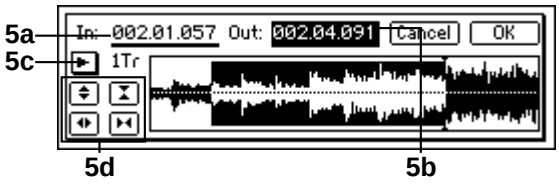
4a. PreRoll .....[00…10]
Set the pre-roll time.

4b. PostRoll.....[00…10]
Set the post-roll time.

4c. Unit.....[Second, Meas(Measure)]
Select the units for the pre/post roll times.
You can select either **seconds** or **measures**.
Press the "OK" button, and the specified pre/post-roll times will take effect. If you press the "Cancel" button, the times you set will be cancelled.



5. Wave.....
You can view the waveform as you set **IN** and **OUT**, which allows you to specify time locations with greater precision.
The play-from/play-to and slow play functions can also be used. (→p.101)



5a. In.....[000:00.000…]
5b. Out.....[000:00.000…]
Set **IN** and **OUT**.
When you place the cursor at "**In**" or "**Out**," the track selected by "TrackSelect" will automatically be set to Solo and Scrub On, so that you can rotate the [VALUE] dial to hear only the sound of that track.

5c. TrackSelect.....[Track1…16]
Select the track whose waveform will be shown and which will be played. Press the "▶" button and select from the list.

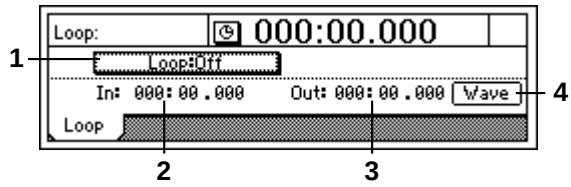
5d. Zoom In/Out/Up/Down
Adjust the size of the waveform display and the playback speed.
: Expand the waveform display vertically.
: Shrink the waveform display vertically.
: Expand the waveform display horizontally.
: Shrink the waveform display horizontally.

When you press the "OK" button, the times you specified for "**In**" and "**Out**" will be overwritten onto the respective keys ([IN/LOC1], [OUT/LOC2]). If you press the "Cancel" button, the times you selected will be cancelled.

12. LOOP

P1 Loop: Loop playback/recording settings

This function repeatedly plays/records over the range of time specified by [IN/LOC1]–[OUT/LOC2]. (→p.33)



1. **Loop..... [On, Off]**
   Turn loop playback on/off.
   Loop:On **On**: Playback will occur repeatedly over the **IN–OUT** range. When "**On**," the [LOOP] key will light.
   Loop:Off **Off**: Playback will be normal.

2. **In ..... (000:00.000…)**
   This shows the loop start time.
   To set this time location, use the [STORE] key and [IN/LOC1] key, or use "Wave."

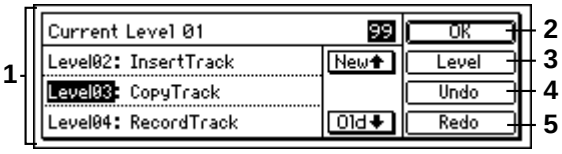
3. **Out ..... (000:00.000…)**
   This shows the loop end time.
   To set this time location, use the [STORE] key and [OUT/LOC2] key, or use "Wave."

4. **Wave .....**
   This displays the waveform.
   You can view the waveform as you set **IN** and **OUT**, which allows you to specify time locations with greater precision. (→p.82 "Wave")

13. UNDO

After performing one of the operations listed below, you can use the **Undo** function to return to the state prior to the operation. The **Redo** function lets you return to the state before you performed Undo.

- Recording
- Track editing
  CopyTrack, InsertTrack, EraseTrack, DeleteTrack, SwapTrack, ReverseTrack, OptimizeTrack, Exp/CompTrack, Copy WholeTrack, SwapWholeTrack, FadeTrack, NormalizeTrack
- WAV file import



1. **UndoList .....[Level 00, 01…99]**
   You can select the operation that will be undone.
   By selecting "01"–"99" (the number of prior operations executed) and executing Undo, you can return to the state before the operation was executed.
   Current: The current undo level
   Level 00: The most recent operation executed
   Level 01…99: The previous 99 operations executed.

2. **OK .....**
   If you press the [UNDO] key, you will return to the previous page.

3. **Level..... [99Level, 8Level, 1Level]**
   Specify the undo level.
   The data will be saved for the specified number of previously-executed operations. You can select the undo level from 99, 8, or 1 operations.

4. **Undo .....**
   Execute the Undo.
   You will return to the state that followed the last operation selected in the "UndoList."

5. **Redo .....**
   Execute Redo.
   You will return to the state of "**Level 00**."

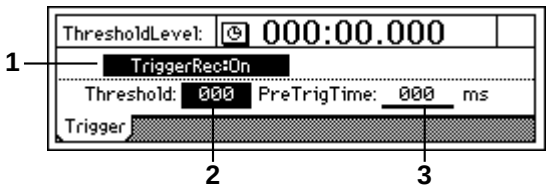
The contents of the list are maintained until the next recording or track editing operation. When you record or edit, the data following the level for which Undo was last executed will be deleted. The contents of the list will also be deleted when you select a different song and record or edit.

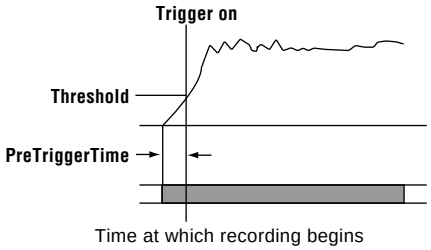
The hard disk of the D1600 preserves a history of up to the last 99 recordings, edits, or operations so that you can use the Undo function to return to an earlier state of your work. This means old data that no longer exists in a track will remain on the disk without being deleted. Such data will consume disk capacity, and may cause the available recording time to appear shorter. In such cases, you can recover the disk capacity by turning off the power of the D1600 to delete the Undo history.

14. TRIGGER

Trigger Recording is a function that starts recording when the volume of the input sound exceeds the threshold level that you specify. (→p.31)

P1 Trigger: Settings to start trigger recording





1. TriggerRec.....[On, Off]
Turn the trigger recording function on/off.
TriggerRec:On **On**: When in record-ready mode, input sounds that exceed the threshold level will initiate recording. When this is "**On**," the [TRIGGER] key will light.
TriggerRec:Off **Off**: Trigger recording will not occur.
After setting "TriggerRec" to "**On**," press the [REC] key (the LED will blink) to enter record-ready mode. When the input to channels whose [TRACK STATUS] is REC exceeds the specified volume (threshold level), recording will begin automatically. In record-ready mode, you can press the [STOP] key or the [REC] key to cancel record-ready mode.

note When this is "**On**," recording will not begin if the input sound fails to reach the threshold level (the "Threshold" setting) in record-ready mode.
If recording does not begin as you expect, press the [STOP] key or [REC] key to cancel trigger recording, and re-adjust the "Threshold" level.

2. Threshold.....[000…100]
When trigger recording is used, this sets the input level at which recording will begin. Recording will begin when the input level exceeds this setting.

note Normally, you should set this to as low a level as possible without allowing noise to trigger recording. The appropriate level will differ depending on the input source. If recording begins too early or too late, re-adjust this level.

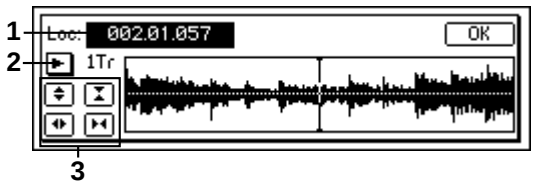
3. PreTrigTime ..... [000…700ms]
When trigger recording is used, the D1600 can record the sound that was heard immediately before recording actually started.
Trigger recording will initiate recording when the input signal exceeds the "Threshold" level, but this can mean that the initial attack of the first note may be lost. In such cases, you can increase the "PreTrigTime" so that the earliest part of the sound (the part that is lower than the threshold level) will also be included in the recording.

This setting is not valid for the beginning of the song. Also, if you use trigger recording to continue recording after the end of a previously-recorded track, setting other than "000ms" will cause a corresponding length of the previously-recorded sound to be lost.

15. SCRUB

Scrub, Play From/Play To, and Slow Play functions can be switched on/off here.
Each time you press the [SCRUB] key, the setting will be switched **on** or **off**.
By using these functions, you can register Locate and Mark times more precisely and easily.

note If you use the Scrub function on a song that uses the tempo track, you should set the counter display unit to **time display (MSM)** or **frame display (MSF)**. If this is set to MBT, rotating the [VALUE] dial may not play the data immediately. (→p.75)



On ([SCRUB] key lit):
The following functions will be available.

- **Scrub function**: Rotate the **[VALUE] dial** to play back the track data.
  Use this to find a specific location in the song while listening to the sound. This method is similar to manually rotating an analog record on a turntable to find the desired location.
- **Play From function**: When you press the **[PLAY] key**, playback will begin from the currently stopped location and will stop after two seconds. Then you will automatically return to the location where playback began.
- **Play To function**: When you hold down the **[STOP] key** and press the **[PLAY] key**, playback will begin from two seconds earlier than the currently stopped location, and will continue to the location where playback had been stopped.

  note By using the Play From function in conjunction with the Play To function, you can find a time location with greater accuracy.
- **Slow Play function**: When you press the **[FF] key**, half-speed playback will begin from the currently stopped location. When you press the [STOP] key playback will stop, and you will return to the location where playback began.

  note The sound will play slowly, at a pitch one octave lower than normal. You can use this function by itself or in conjunction with a pitch shifter to learn or practice difficult phrases.

When this is "**On**," the [VALUE] dial is used only for Scrub playback. This means that the [VALUE] dial cannot be used to set parameter values.

Off ([SCRUB] key dark):
Operation will be normal.

1. **Loc (Locate)..... [000:00.000…]**
   Change the current time location.
   You can rotate the [VALUE] dial to change the current time location while listening to the sound and viewing the waveform.
2. **TrackSelect.....[Trk1…16]**
   Select the track that will be played and whose waveform will be displayed.
   Press the "▶" button and select from the list.
3. **Zoom In/Out/Up/Down.....**
   Adjust the size of the waveform display and the playback speed.
   ↕: Expand the waveform display vertically.
   ↕: Shrink the waveform display vertically.
   ↔: Expand the waveform display horizontally.
   ↔: Shrink the waveform display horizontally.

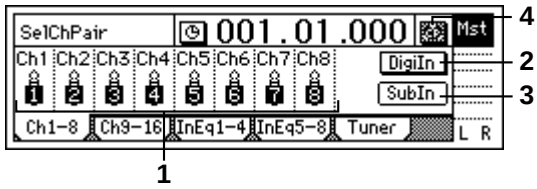
16. ENTER

By pressing the [ENTER] key, you can finalize a parameter selection or turn it on/off.

17. INPUT

P1 Ch1–8: Select the inputs for mixer channels 1–8

Here you can select the inputs for mixer channels 1–8. (→p.23)



1. Ch1...8 ..... [Input1…8, S/PDIF L, R, Rhythm L, R, CD L, R*]

Select a channel icon "Ch1"–"Ch8," and select the source that will be input to each channel.

INPUT1…8: The analog output from an instrument connected to the [INPUT 1]–[INPUT 8/GUITAR IN] jacks will be input to the channel.

S/PDIF L, R: The digital output from a DAT connected to the [S/P DIF IN] jack will be input to the channel. This can be selected when "DigiIn" is "**On**."

Insert effects cannot be used on the digital input.

Rhythm L, R: The rhythm selected by "SelRhythm" (→p.95) will be input to the channel. During recording/playback, the rhythm will be heard regardless of the "Rhythm" (→p.95) "**On/Off**" setting. This rhythm can be recorded. (→p.61)

CD L, R: if an optional CDRW-2 is installed, the corresponding channel of an inserted audio CD can be input to a channel.

* **CD L, R** can be selected only if the optional CDRW-2 is installed.

* The audio of the internal CD-R/RW drive is connected as an analog signal.

2. DigiIn ..... [On, Off]

Turn this "On" if you wish to use the digital input (S/PDIF IN).

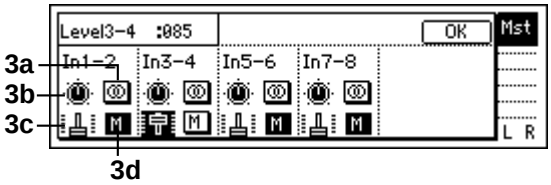
When you press the "DigiIn" button, a message of "Obey Copyright Rules" will appear. Carefully read the owner's manual section "COPYRIGHT WARNING" (→p.1). If you accept the terms, press the "Yes" button in response to the "AreYouSure?" prompt. Digital input will be enabled.

DigiIn **On**: "**S/PDIF L**" or "**S/PDIF R**" can be selected for "Ch1…8."

When this is "**On**," insert effects cannot be used.

DigiIn **Off**: "**S/PDIF L**" or "**S/PDIF R**" cannot be selected for "Ch1…8."

3. SubIn .....



Make these settings when you wish to use the inputs as "**sub inputs**" for inputting the return from an external effect to the [INPUT 1]–[INPUT 8/GUITAR IN] jacks, or so that the sound of an instrument connected to these jacks can be mixed with the track playback. (→p.50)

After completing a song on the D1600, you can synchronize a sequencer to the D1600 and use sub inputs to mix the sequenced sounds with the track playback of the D1600.

These inputs are sent via the stereo/mono switch through the balance and fader settings, and then to the master LR bus.

note Use the [AUX OUT] jack to transmit the effect send to your external effect processor. (→p.108 [MASTER EFFECT/AUX] "AuxSend" tab page)

3a. Stereo/Mono..... [Stereo, Mono]

Stereo: Odd-numbered channel inputs will be sent to the master L bus, and even-numbered channel inputs will be sent to the master R bus.

Mono: Odd-numbered and even-numbered channel inputs will be summed, and the same signal will be sent to the master L bus and R bus. Use this when the input is received on only one channel.

If the sound distorts when this is set to "**Mono**," adjust the level on the input device or using the [TRIM] knob.

3b. Balance.....[L63…CNT…R63]

Adjust the balance for when the sub input is sent in stereo to the master LR bus.

3c. Fader .....[000…100]

Adjust the amount of sub input signal that is sent to the master LR bus.

3d. Mute .....[On, Off]

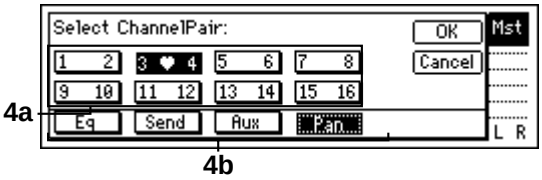
M **On**: The sub input will be muted; it will not be sent to the master LR bus.

M **Off**: The sub input will not be muted; it will be sent to the master LR bus.

4. Pair .....

This lets you pair adjacent mixer channels.

Press the "" button to access the following screen.



Channels that are paired will be controlled by the knobs and fader of the odd-numbered channel. Operating the knobs or fader of the even-numbered channel will not control anything.

4a. Select ChannelPair ..... [1 2…15 16]
Press the "1 2"–"15 16" button for the channels that you wish to pair. When pairing is "**On**," the heart icon will be displayed.

4b. Select Function ..... [Eq, Send, Aux, Pan]
Select the functions that will be paired for the channels selected by "Select ChannelPair."
For the functions "EQ"–"Pan" that you wish to pair, press the button to enable pairing (the button will be highlighted). The settings will be applied when you press the "OK" button.

note When pairing is on, the pairing function will always apply to the fader and track status.

P2 Ch9–16: Select the inputs for mixer channels 9–16

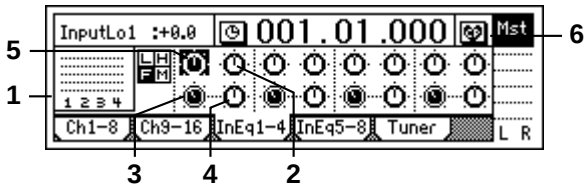
Here you can select the inputs for mixer channels 9–16.

Refer to "P1 Ch1–8: Select the inputs for mixer channels 1–8."

P3 InEq1–4: EQ settings for inputs 1–4

Here you can apply **EQ** (equalizer) to the analog inputs from the [INPUT 1]–[INPUT 4] jacks. Make these settings when you wish to directly record the sound that is adjusted by the EQ.
The EQ has three bands. High EQ and low EQ are shelving type, and the mid EQ is a peaking type with adjustable cutoff frequency.

This EQ cannot be used on the digital input (S/P DIF IN) or on the rhythm.



1. **InputLevelMeter ..... (1, 2, 3, 4/CLP, –6, –12, –18, –40dB)**
This shows the level of each analog input.
The horizontal axis indicates the channel, and the vertical axis indicates the level.
Inputs that are not selected in "Ch1…8" ([INPUT] P1-1) will not be displayed.

2. **InputHigh ..... [(Fc=10kHz)–15.0…+15.0(dB)]**
Set the input high EQ gain. This adjusts the high-frequency range.
You can cut/boost over a range of –15.0 – +15.0 dB at a 10 kHz cutoff frequency.

3. **InMidFc ..... [100Hz…20.0k(Hz)]**
Set the cutoff frequency for the input mid EQ.
This can be adjusted over the range of 100 Hz–20.0 kHz.

4. **InputMid ..... [–15.0…+15.0(dB)]**
Set the input mid EQ gain.
This adjusts the mid-frequency range. You can cut/boost over a range of –15.0 – +15.0 dB at the cutoff frequency specified by "InMidFc."

5. **InputLow ..... [(Fc=100Hz)–15.0…+15.0(dB)]**
Set the input low EQ gain. This adjusts the low-frequency range.
You can cut/boost over a range of –15.0 – +15.0 dB at a 100 Hz cutoff frequency.

6. **Pair .....**
Enable pairing for adjacent mixer channels. (→p.102 "Pair")

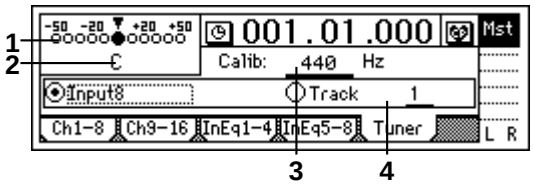
P4 InEq5–8: EQ settings for inputs 5–8

Apply EQ (equalizer) to the analog input from the [INPUT 5]–[INPUT 8/GUITAR IN] jacks.
Refer to "P3 InEq1–4: EQ settings for inputs 1–4."

P5 Tuner: Tuner

You can use the built-in tuner to tune an instrument connected to the [INPUT 8/GUITAR IN] jack. You can also determine the pitch of a track.

This page cannot be selected during recording or playback. Nor is recording possible.
In order to allow accurate tuning, the insert effects and master effects will automatically be turned off when this page is displayed.



1. **CENT Scale ..... (–50…+50)**
The "▽" symbol in the center will change to "▼" when the tuning is correct. The amount of pitch deviation is shown in units of cents (100 cents = 1 semitone, and 1200 cents = 1 octave)

2. **NoteDisplay ..... (C…B)**
This shows the name of the note that is closest to the input sound.
It is not possible to detect the pitch if two or more notes are played simultaneously.

3. **Calib ..... [435…440…445Hz]**
Specify the frequency that will be the basis for tuning. Normally you will set this to "**440**."

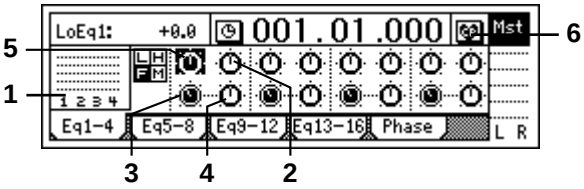
4. **SelectSource ..... [Input8, Track No1…16]**
Input8: Select this when you wish to tune an external device such as a guitar, or when using the built-in mic to tune.
Track No "1…16": Select the track whose pitch you wish to measure. Move to the time location that you

wish to measure, then specify the track in this page, and play back to measure the pitch of the specified track.

18. EQ/PHASE

P1 Eq1–4: EQ settings for mixer channels 1–4

Here you can apply EQ (equalizer) to the playback of tracks 1–4.
Use these settings when you wish to apply EQ to the playback.
The EQ has three bands. High EQ and low EQ are shelving type, and the mid EQ is a peaking type with adjustable cutoff frequency.



1. **TrackLevelMeter ..... (1, 2, 3, 4/CLP, –6, –12, –18, –40dB)**
   This shows the input level from each track. The horizontal axis indicates the channel, and the vertical axis indicates the level.

2. **HighEq .....[(Fc=10kHz)–15.0…+15.0(dB)]**
   Set the high EQ gain. This adjusts the high-frequency range.
   You can cut/boost over a range of –15.0 – +15.0 dB at a 10 kHz cutoff frequency.

3. **MidFc ..... [100Hz…20.0k(Hz)]**
   Set the cutoff frequency for the mid EQ.
   This can be adjusted over the range of 100 Hz–20.0 kHz.

4. **MidEq..... [–15.0…+15.0(dB)]**
   Set the mid EQ gain. This adjusts the mid-frequency range. You can cut/boost over a range of –15.0 – +15.0 dB at the cutoff frequency specified by "MidFc."

5. **LowEq ..... [(Fc=100Hz)–15.0…+15.0(dB)]**
   Set the low EQ gain. This adjusts the low-frequency range.
   You can cut/boost over a range of –15.0 – +15.0 dB at a 100 Hz cutoff frequency.

6. **Pair .....**
   Enable pairing for adjacent mixer channels. (→p.102 "Pair")

P2 Eq5–8: EQ settings for mixer channels 5–8

Here you can apply EQ (equalizer) to the playback of tracks 5–8.
Refer to "P1 Eq1–4: EQ settings for mixer channels 1–4."

P3 Eq9–12: EQ settings for mixer channels 9–12

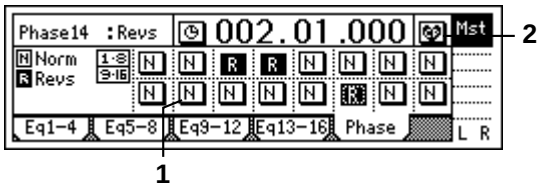
Here you can apply EQ (equalizer) to the playback of tracks 9–12.
Refer to "P1 Eq1–4: EQ settings for mixer channels 1–4."

P4 Eq13–16: EQ settings for mixer channels 13–16

Apply EQ (equalizer) to the playback of tracks 13–16.
Refer to "P1 Eq1–4: EQ settings for mixer channels 1–4."

P5 Phase: Phase settings for mixer channels

Here you can invert the phase of each channel.
This setting applies to the playback tracks. If an audio device is input in stereo via a jack whose hot and cold conductors are reversed, their stereo position may be blurred, or portions of the sound may be cancelled. This setting lets you invert the phase to correct such situations.



1. **Phase..... [N, R]**
   N (NormalPhase): The phase of this channel will not be inverted. Normally you will leave this at "**N**."
   R (ReversePhase): The phase of this channel will be inverted.

2. **Pair .....**
   Enable pairing for adjacent mixer channels. (→p.102 "Pair")

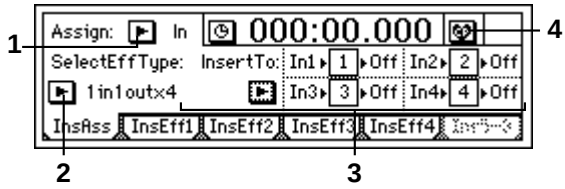
19. INSERT EFFECT

The insert effects can be applied to the analog inputs during recording, or to track playback.

The D1600 lets you use up to eight different insert effects simultaneously.

Insert effects cannot be used if "DigiIn" is turned "**On**" in the [INPUT] "Ch1–8" or "Ch9–16" tab pages.

P1 InsAss: Insert effect insertion location/type



1. **Assign ..... [In(Input), Trk(PlayTrack)]**
Select whether the insert effect will be applied to an analog input or to a playback track.
In (Input): Use these settings to apply an effect to analog inputs from the [INPUT 1]–[INPUT 8/GUITAR IN] jacks while recording.
Trk (PlayTrack): Use these settings to apply an effect to a playback track. Effects can also be used during mixdown.

2. **SelectEffType..... [1in2outx2, 2in2outx2, 1in1outx4, 1in1outx8]**
Select the configuration of insert effects.
The effects that can be selected will depend on this setting. For the effects that are available for each configuration, refer to "Effect Program List" (→p.144).

1in2outx2 or 1in1outx2: Select this when you wish to use two **mono-in/stereo-out** effects.
This is ideal when you wish to add more spaciousness to a lead guitar or vocal. It can also be used as a 1 in 1 out monaural effect.

This can be selected only if "Assign" is "**In**."

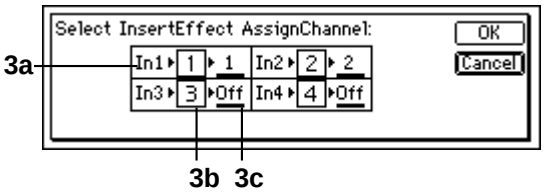
2in2outx2: Select this when you wish to use two **stereo-in/stereo-out** effects.
This is ideal for stereo input sources such as keyboard.

1in1outx4: Select this when you wish to use four **mono-in/mono-out** effects.
This is ideal for sources for which the panning is fixed, such as rhythm guitar.

1in1outx8: Select this when you wish to use eight **mono-in/mono-out** effects.
This is ideal for sources for which the panning is fixed, such as drums.

3. **InsertTo.....**
Select the location at which the insert effect will be inserted.
Press the "▶" button to access the dialog box and make settings. Press the "OK" button to execute your settings, or press the "Cancel" button to cancel them.

Lowest-numbered effects will be given priority when you specify the insertion location of an insert effect.



■ When "Assign" is "In"

Specify the return channel.

3a. Input .....(In1...8, *CL, CR, DrL, DrR)
This shows the selected input.
In1...8: Analog input ([INPUT1]–[INPUT8/GUITAR IN])
***CL, CR**: L or R audio signals from the internal CD-RW drive (sold separately)
DrL, DrR: Rhythm L or rhythm R.
* Only if an internal CD-R/RW drive is installed

3b. Effect ..... (1…8)
This shows the effect number.

3c. SelectCh ..... [1…16, Off]
Specify the return channel for the effect output.

■ When "Assign" is "Trk"

The signal flow will be: input channel select → (effect) → (return = insert channel).

3a. SelectCh..... [1…16, Off]
Select the insert destination mixer channel.

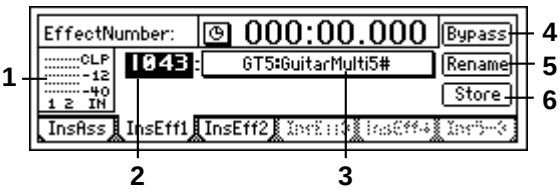
note When "SelectEffType" is "**2in2outx2**," only odd-numbered channels can be selected for "SelectCh."

3b. Effect ..... (1…8)
This shows the insert effect number.

3c. OutputCh ..... (1…16, Off)
This shows the return channel of the effect output. The same channel as "3a. SelectCh" will be selected.

4. **Pair .....**
You can specify that adjacent mixer channels be paired. (→p.102 "Pair")

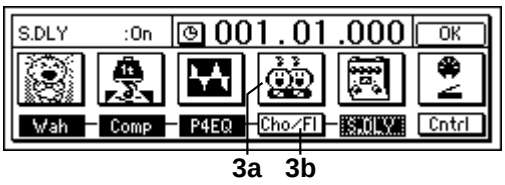
P2 InsEff1: Selection and settings for Insert Effect 1



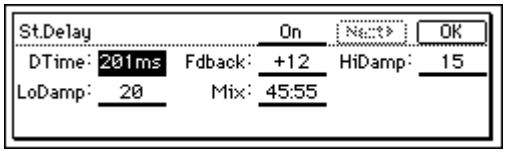
1. InputLevelMeter..... (IN1, 2/CLP, –6, –12, –18, –40 dB)
This shows the input level of each effect. The horizontal axis indicates the effect input, and the vertical axis shows the level. "**IN2**" will be input only if [INSERT EFFECT] "InsEff1" tab page is "**2in2outx2**."

2. EffectNumber..... [000, 001…128, U001…128, (#)]
Select the effect program.
"**U001**"–"**U128**" is the user area, where you can store effect programs that you have edited.
If the effect program includes a control function, a "**#**" will be displayed following the effect name.
The effects that can be selected will depend on the "SelectEffType" setting in the [INSERT EFFECT] "InsAss" tab page. For the effects that are available in each configuration, refer to "Effect Program List" (→p.144).

3. EffectProgramName ..... (Effect Program List)
When you press this button, the "Effect Algorithm" dialog box will appear. Here you can view the structure of the program and the on/off settings of each effect. Each insert effect program consists of up to five different effects.



3a. EffectIcon .....
Select the effect that you wish to edit.
When you press the "EffectIcon" button, the "Effect Edit" dialog box will appear.



For details on each parameter, refer to "Effect Parameter List" (→p.113). The "**On/Off**" setting at the top of the screen is linked with "Effect On/Off" (3b).

3b. Effect On/Off .....[On, Off]
Turn each effect on/off.
Cho/Fl **On**: The effect is on.
Cho/Fl **Off**: The effect is off.

4. Bypass .....
This lets you compare the sound processed by the effect with the unprocessed effect. Press the "Bypass" button to bypass the effect (the unprocessed sound will be heard).

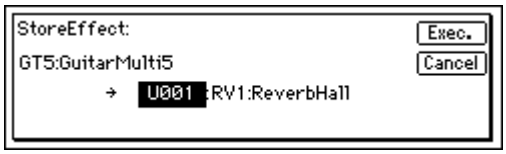
Press the "Cancel" button to cancel bypass.

5. Rename .....
Here you can modify the name of the effect program.
Select the effect program whose name you wish to modify, press the "Rename" button to access the dialog box, and modify the name. A name of up to 16 characters can be used. (→p.21)

After modifying the program name, use "Store" (→P2-6) to store it. The effect program name you modified will be discarded unless you use "Store" to store it.

6. Store.....
The effect program whose name or parameters you modified can be stored in user areas "**U001**"–"**U128**."
The D1600 provides 128 user areas for insert effects. In the "StoreEffect" dialog box, specify the "user area number" and press the "Exec." button to store the effect. To cancel, press the "Cancel" button.

Effects are always overwritten.



P3 InsEff2: Selection and settings for Insert Effect 2

Select insert effect 2 and make settings for it.
For details refer to "P2 InsEff1: Selection and settings for Insert Effect 1."

P4 InsEff3: Selection and settings for Insert Effect 3

Select insert effect 3 and make settings for it.
This will appear only if you have selected "**1in1outx4**" or "**1in1outx8**" for "SelectEffType" in the "InsAss" tab page (→p.105).

For details refer to "P2 InsEff1: Selection and settings for Insert Effect 1."

P5 InsEff4: Selection and settings for Insert Effect 4

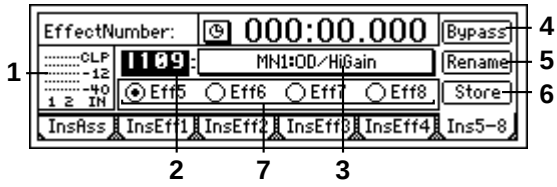
Select insert effect 4 and make settings for it.
This will appear only if you have selected "**1in1outx4**" or "**1in1outx8**" for "SelectEffType" in the "InsAss" tab page (→p.105).

For details refer to "P2 InsEff1: Selection and settings for Insert Effect 1."

P6 Ins5–8: Selection and settings for Insert Effects 5–8

Select insert effects 5–8 and make settings for them.
This will appear only if you have selected "**1in1outx8**" for "SelectEffType" in the "InsAss" tab page (→p.105).

For insert effects 5–8, use "SelectEffect5…8" to select an effect and edit it.

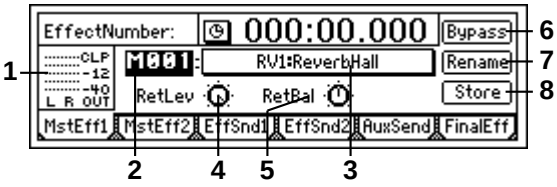


7. SelectEffect5…8 ..... [Eff5, Eff6, Eff7, Eff8]
Of insert effects 5–8, select the effect that will be displayed in this page. Editing, bypass, and rename operations will affect the effect that is displayed.
For other details refer to "P2 InsEff1: Selection and settings for Insert Effect 1."

20. MASTER EFFECT/AUX/ FINAL EFFECT

The **master effects** are used by sending an adjustable send amount from each channel to the effect. They can be used to adjust the overall depth and balance. The D1600 provides two master effects.
The **final effect** is used to adjust the final stage of the master LR bus. The D1600 provides one stereo final effect.
The **AUX send** is used when you wish to apply an external effect to the sound.

P1 MstEff1: Selection and settings for master effect 1

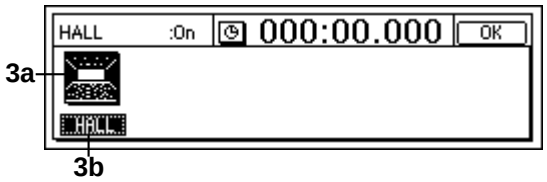


1. OutputLevelMeter ..... (OUT L, R/CLP, –6, –12, –18, –40 dB)
This indicates the output level of the effect.
The horizontal axis indicates the effect output, and the vertical axis indicates the level.

note The send amount from each channel (i.e., the level that is input to the effect) is adjusted in the "EffSnd1" tab page.

2. EffectNumber ..... [M000, M001…032, u001…032]
Select the effect program.
"**u001**"–"**u032**" is the user area, where effect programs that you edit can be stored.

3. EffectProgramName ..... (Effect Program List)
When you press this button, the "Effect Algorithm" dialog box will appear. Here you can view the structure of the program, and check the on/off status.



3a. EffectIcon .....

3b. Effect On/Off ..... [On, Off]
Refer to "EffectIcon" and "Effect On/Off" for insert effects (→p.106).

4. RetLev ..... [000…100]
Adjust the return level from the master effect to the master bus.
Higher settings will cause the effect to become more apparent.

5. **RetBal.....[L63…CNT…R63]**
Adjust the return balance from the master effect to the master LR bus.
"**L**" and "**R**" indicate L (left) and R (right) of the master bus.

6. **Bypass.....**
Refer to "Bypass" for the insert effects (→p.106).

7. **Rename .....**
Here you can modify the name of the effect program.
Select the effect program whose name you wish to modify, press the "Rename" button to access the dialog box, and modify the name. A name of up to 16 characters can be used. (→p.21)

After modifying the program name, use "Store" (→P1-8) to store it. The effect program name you modified will be discarded unless you use "Store" to store it.

8. **Store .....**
The effect program whose name or parameters you modified can be stored in user areas "**u001**"–"**u032**."
The D1600 provides 32 user areas for master effects. In the "StoreEffect" dialog box, specify the "user area number" and press the "Exec." button to store the effect. To cancel, press the "Cancel" button.

Effects are always overwritten.

P2 MstEff2: Selection and settings for master effect 2

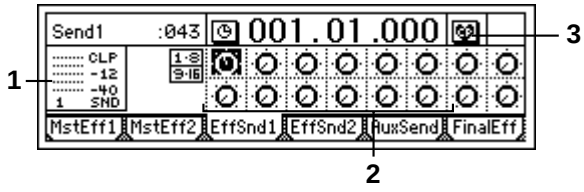
Here you can select and make settings for master effect 2.

For details refer to "P1 MstEff1: Selection and settings for master effect 1."

note The send amount from each channel (the input level to the effect) is adjusted in the "EffSnd2" tab page.

P3 EffSnd1: Send settings for effect 1

Here you can set the send amount from each mixer channel to effect 1.



1. **SendLevelMeter.....**
(SND 1/CLP, –6, –12, –18, –40 dB)
This shows the send level to effect 1.
The vertical axis shows the level.

2. **Send ..... [Ch1…16/000…100]**
Adjust the send amount from each mixer channel to effect 1.

3. **Pair .....**
Specify pairing for adjacent mixer channels.
(→p.102 "Pair")

P4 EffSnd2: Send settings for effect 2

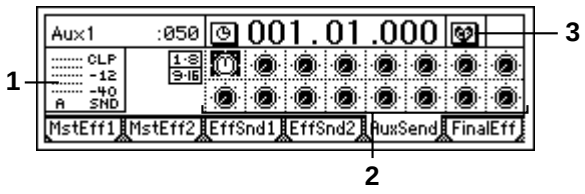
Here you can set the send level from each mixer channel to effect 2.

For details refer to "P3 EffSnd1: Send settings for effect 1."

P5 AuxSend: External send settings

Here you can set the send level from each mixer channel that will be output to the [AUX OUT] jack.

For details on connecting and using an external effect, refer to p.48.



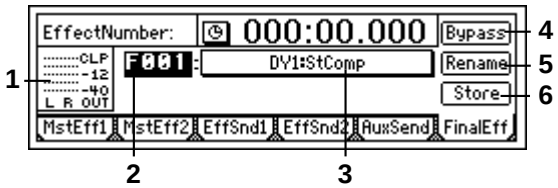
1. **SendLevelMeter.....**
(SND A/CLP, –6, –12, –18, –40 dB)
This shows the output level to the [AUX OUT] jack.
The vertical axis shows the level.

2. **Aux ..... [Ch1…16/000…100]**
Set the send amount from each mixer channel to the [AUX OUT] jack.

3. **Pair .....**
Specify pairing for adjacent mixer channels.
(→p.102 "Pair")

P6 FinalEff: Selection and settings for the final effect

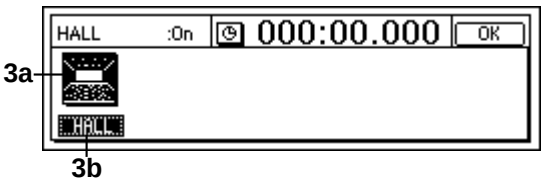
The final effect is applied to the overall output from the mixer, and is used mainly to adjust the overall balance. For the location at which the final effect is inserted, refer to the block diagram (→p.143).



1. **OutputLevelMeter ..... (OUTL, R/CLP, –6, –12, –18, –40 dB)**
   This shows the output level of the effect.
   The horizontal axis shows the effect output, and the vertical axis shows the level.

2. **EffectNumber .....[F000, F001…032, u033…064]**
   Select the desired effect program.
   "**u033**"–"**u064**" is the user area, in which you can store effect programs that you edited.

3. **EffectProgramName..... (Effect Program List)**
   When you press this button, the "Effect Algorithm" dialog box will appear. Here you can view the structure of the program and its on/off status.



3a. EffectIcon.....

3b. Effect On/Off ..... [On, Off]
Refer to "EffectIcon" and "Effect On/Off" for the insert effects (→p.106).

4. **Bypass .....**
   Refer to "Bypass" for the insert effects (→p.106).

5. **Rename.....**
   Here you can modify the name of the effect program.
   Select the effect program whose name you wish to modify, press the "Rename" button to access the dialog box, and modify the name. A name of up to 16 characters can be input. (→p.21)

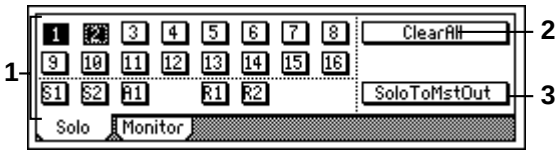
   After modifying the program name, use "Store" (→P6-6) to store it. The effect program name you modified will be discarded unless you use "Store" to store it.

6. **Store .....**
   The effect program whose name or parameters you modified can be stored in user areas "**u033**"–"**u064**."
   The D1600 provides 32 user areas for final effects. In the "StoreEffect" dialog box, specify the "user area number" and press the "Exec." button to store the effect. To cancel, press the "Cancel" button.

   Effects are always overwritten.

21. SOLO/MONITOR

P1 Solo: Solo select



1. **SelectSolo ..... [1...16, S1, S2, A1, R1, R2/On, Off]**
   Switch the solo function on/off.
   Only the audio for which the "Solo" button is "**On**" will be sent to the monitor bus. Use this function when you wish to hear only a specific channel (or channels) out of multiple audio sources, or to check the send etc. The solo signal will be output to the [MONITOR OUT L/R] jacks and to the [PHONES] jack.
   If one or more are "**On**," the [SOLO/MONITOR] key will blink.
   1 **On**: Solo is on. Only the selected signal(s) will be heard.
   1 **Off**: Solo is off. If another signal is set to solo on, signals for which solo is off will be muted.

   1…16: Mixer channels 1–16
   S1, S2: Sends to master effects 1 and 2
   A1: Send to external output [AUX OUT] jack
   R1, R2: Return from master effect 1 and 2

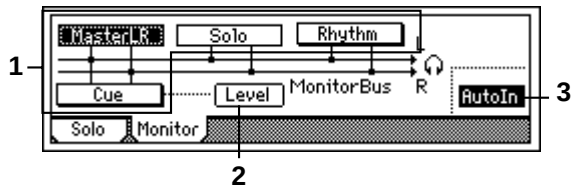
   To adjust the volume of each signal, use the corresponding pages or knobs. Be aware that when you switch the signal that is selected, some settings may cause the monitor volume to change dramatically. Please use caution.

2. **ClearAll .....**
   This turns "**Off**" all "SoloSelect" settings that were "**On**."

3. **SoloToMstOut.....[On, Off]**
   This specifies whether or not the solo signal will be output from the [MASTER OUT L/R] jacks. Use this setting if you have connected your monitor system to the [MASTER OUT L/R] jacks and wish to use it for soloing.
   SoloToMstOut **On**: The solo signal will be output from the [MASTER OUT L/R] jacks.
   SoloToMstOut **Off**: Normal operation. The solo signal will be output from the [MONITOR OUT L/R] jacks and from the [PHONES] jack.
   The "**On**" setting is valid only within the [SOLO/MONITOR] page. When you exit this page, it will automatically be turned "**Off**."

P2 Monitor: Monitor settings

Select the audio signals that will be output from the monitor output ([MONITOR OUT L/R] jacks) and the headphone output ([PHONES] jack).



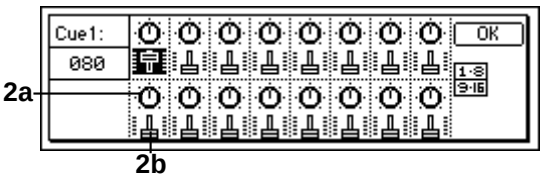
1. SelectMonitor.....[MasterLR, Cue, Rhythm, (Solo)/On, Off]
Select the audio signals that will be output from the [MONITOR OUT L/R] jacks and the [PHONES] jack.

Cue **On**: The signal will be output for monitoring.

Cue **Off**: The signal will not be output for monitoring.

MasterLR: The master LR bus will be output for monitoring. Normally you will select this.
Cue: The channels specified by "Level" will be output for monitoring. Select this when you wish to adjust the monitor volume and pan for comfort during recording without affecting the recording levels.
Rhythm: The built-in rhythm sound will be directly output for monitoring. During a live performance, you can use this to output the sound of the tracks from the [MASTER OUT L/R] jacks, and use the headphones to listen only to the rhythm. Normally you will leave this off.
(Solo): If solo is turned "**On**" for even one source in the "Solo" tab page, this will be selected automatically, and it will not be possible to select "**MasterLR**," "**Cue**." To select these, you must first turn solo "**Off**" in the "Solo" tab page.

2. Level.....
Set the volume level and panning of each mixer channel when "Cue" is turned "**On**" in "SelectMonitor." Press the "Level" button, and view and adjust the settings in the "cue setting page."



2a. Pan (Ch1–16).....[L63…CNT…R63]
Adjust the stereo location at which each channel cue signal will be output to the monitor.

2b. Cue .....[000…100]
Set the monitoring output volume for each channel cue signal.

3. AutoIn.....[On, Off]
For mixer channels whose [TRACK STATUS] is **REC**, select whether the audio output for monitoring will be the external input sound assigned in the "Input" tab page or the sound of the playback track.

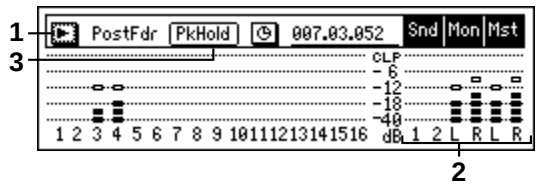
AutoIn **On**: For mixer channels whose [TRACK STATUS] is **REC**, the track playback sound will be heard during playback, and the external input sound will be heard during recording (and rehearsing) and when stopped.

AutoIn **Off**: Normal operation. You will always hear the input sound for mixer channels whose [TRACK STATUS] is "**REC**."

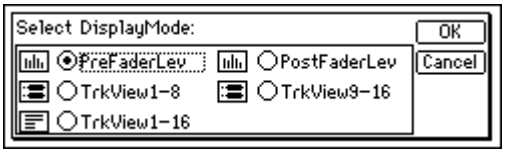
22. METER/TRACK VIEW

Here you can view the pre fader level meter and post fader level meter. You can also use the track view display to check whether a track contains audio events.

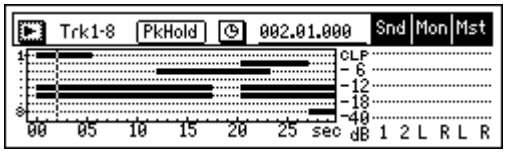
From the top, the level meters indicate **CLP**, **–3**, **–6**, **–9**, **–12**, **–15**, **–18**, **–24** and **–40 dB**.



1. **Select DisplayMode.....[PreFaderLev, PostFaderLev, TrkView1–8, TrkView9–16, TrkView1–16]**
   Select the signals that you wish to display.
   Press the "▸" button to access the dialog box, and make a selection. Press the "OK" button to activate your selection, or press the "Cancel" button to cancel.



   PreFaderLev: Display the pre-fader level of each mixer channel.
   PostFaderLev: Display the post-fader level of each mixer channel.
   TrkView1–8: Display tracks 1–8. Areas where audio events exist are shown as a heavy line.

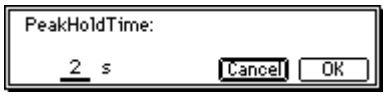


   TrkView9–16: Display tracks 9–16. (→"TrkView1–8")
   TrkView1–16: Display tracks 1–16. (→"TrkView1–8")

2. **Snd1, 2/Mon L, R/Mst L, R.....**
   These are the level meters for "Snd1, 2" (effect send 1, 2), "Mon L, R" (monitor L, R), and "Mst L, R" (master L, R).

note "MstL, R" is also displayed at the right of the page in [SONG], [TRACK], [RECORD], [INPUT], and [EQ/PHASE] modes, allowing you to check the master LR level.

3. **PkHold ..... [0…8s, ∞]**
   Specify the time until the peak hold of the level meter is cancelled.



   This setting applies to the level meters of this page. Press the "PkHold" button to access the dialog box, and make the desired setting. Press the "OK" button to activate your selection, or press the "Cancel" button to cancel.
   0…8s: 0–8 seconds
   ∞: The peak hold indicator will be held forever. The hold indicator will be cleared when you press the "PkHold" button to access the dialog box.

23. TRACK STATUS

These indicators show the status of each track.

Each time you press the [TRACK STATUS] key, the LED will change color to indicate the selected function.

PLAY (LED lit green)
The selected track can be played.

REC (LED lit red)
The selected track can be recorded.

INPUT (LED lit orange)
An external audio signal can be sent to the selected track. This can be done only while stopped.

Select this when you wish to listen to the sound of other tracks as you play your instrument, or for rehearsing before you record, or when you wish to mix an external input with the playback tracks.

MUTE (LED off)
The selected track will be muted (silent).

The settings available here will depend on the state/settings of the recorder. When stopped, the selection will change in the order **PLAY→INPUT→REC→MUTE→PLAY**. During recording or playback, the selection will alternate between **PLAY↔MUTE or INPUT↔MUTE**.

24. PAN

Set the location (pan) at which each channel will be output to the stereo signal of the master LR bus.
For channels **1–16** whose pair setting is "**Off**," this is the pan setting to the masterLR bus.

note These settings can be paired and registered in a scene.

When recording to tracks whose channels have a balance setting, be sure to set the knob at "**CNT**."

25. FADER

Adjusts the volume levels.

The faders that adjust the recording level will differ depending on whether you are recording an external input or performing bounce recording.

- **When recording an external input** (when "**Input**" is selected for the [RECORD] "RecMode" tab page item "Select RecMode"), the channel faders will adjust the recording level.
- **When using bounce recording** (when "**Bounce**" is selected for "SelectRec Mode" in the [RECORD] "RecMode" tab page), the master fader will adjust the recording level.

[CHANNEL] faders .....[1…16]
These adjust the volume level of each channel.

- For a channel whose [TRACK STATUS] is **PLAY**, the fader adjusts the playback volume.
- For a channel whose [TRACK STATUS] is **REC**, the fader adjusts the recording level of the external input or the rhythm.
- For a channel whose [TRACK STATUS] is **INPUT**, the fader adjusts the recording level of the external input.

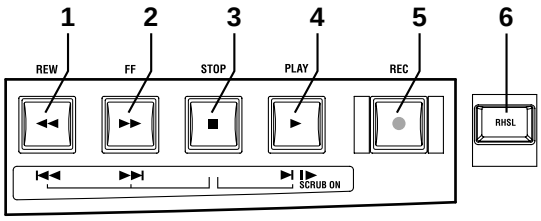
[MASTER] fader ..... [MASTER]
This adjusts the volume level of the master LR bus.

The signal from the [MASTER OUT L/R] jacks and [S/P DIF OUT] jacks will be output at the specified volume.

- **When recording an external input** (when "**Input**" is selected for the [RECORD] "RecMode" tab page item "Select RecMode"), this fader adjusts the volume level of the master bus.
- **When bounce-recording** (when "**Bounce**" is selected for "SelectRecMode" of the [RECORD] "RecMode" tab page), this fader adjusts the recording level on the track for which the [TRACK STATUS] is set to **REC**.

26. TRANSPORT KEYS

These keys are used to operate the recorder for operations such as recording and playback.



1. **[REW] key**
   While stopped or playing, this key moves the time backwards (rewinds).
   If you hold down the [STOP] key and press the [REW] key, you will move to the beginning of the current song (if you are in the middle of the current song), or to the beginning of the previous song (if you are already at the beginning of the current song).

2. **[FF] key**
   When stopped or playing, this key moves the time backward (rewind).
   If you hold down the [STOP] key and press the [FF] key, you will move to the end of the current song. If you are already at the end of the song, you will move to the beginning of the next song.
   When the Scrub function is on, you can press this key to perform **Slow Play** (→p.101).

3. **[STOP] key**
   This key ends recording or playback, and stops the recorder.

4. **[PLAY] key**
   When you press this key, tracks whose [TRACK STATUS] is **PLAY** will play back.
   For tracks whose [TRACK STATUS] is **REC**, pressing the [REC] key and then pressing this key will begin recording.
   While the recorder is recording or playing, the LED will light.
   When the Scrub function is on, you can press this key to use **Play From**, or hold down the [STOP] key and press this key to use **Play To**. (→p.101)

5. **[REC] key**
   When you press this key, the D1600 will enter record-ready mode (the LED will blink). In order to enter record-ready mode, [TRACK STATUS] must be set to **REC** for at least one track. When you press the [PLAY] key, the LED will light and recording will begin.
   If the foot switch function (→p.75) has been set to "PunchI/O," the foot switch will act as a substitute for the [REC] key.

6. **[RHSL (REHEARSAL)] key**
   This key lets you rehearse a recording.
   When you press this key, the **Rehearsal function** will be turned on (the LED will light), and you will be able to rehearse the recording.
   Recording will not actually occur. When you turn rehearsal on and start recording, the monitor output will behave in the same way as when actually recording, allowing you to practice recording.

note It is convenient to use this to rehearse before using auto punch-in/out recording.

Effect Parameter List

Example

Algorithm number: Category number: Algorithm name

1: RV1: Reverb Hall

Parameter name shown on screen (parameter name)	Range of parameter	Explanation
*Time (Reverb Time [sec])	01...10.0s	Sets the reverberation time

* Parameters marked by an "*" in front of the screen parameter name can be controlled by an external device such as an expression pedal. (→p.75 "Device")

Insert (2in2outx2)/Master/ Final Effect

These algorithms can be selected for an **insert effect** if "**2in2outx2**" is selected for "SelectEffType". They can also be selected for a **master effect** or a **final effect**.

When these effects are used as an insert effect or final effect, they are **stereo-in/stereo-out**. However when these effects are used as a master effect, they are **mono-in/stereo out**.

Reverb RV1 – RV7
Category: Reverb-type effects

1: RV1: Reverb Hall
This hall-type reverb simulates the reverberation of mid-size concert halls or ensemble halls.

2: RV2: Smooth Hall
This hall-type reverb simulates the reverberation of larger halls and stadiums, and creates a smooth release.

3: RV3: Reverb Wet Plate
This plate reverb simulates warm (dense) reverberation.

4: RV4: Reverb Dry Plate
This plate reverb simulates dry (light) reverberation.

Time (Reverb Time [sec])	0.1...10.0s	Sets the reverberation time
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
PreDly (Pre Delay [msec])	0...200ms	Sets the delay time from the dry sound
Thru (Pre Delay Thru [%])	0...100	Sets the mix ratio of non-delay sound
EQTrim (EQ Trim)	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15...+15dB	Sets the gain of High EQ
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Pre Delay [msec], : Pre Delay Thru [%]
The "Pre Delay" sets the delay time to the reverb input, allowing you to control spaciousness.
Using the "Pre Delay Thru" parameter, you can mix the dry sound without delay, emphasizing the attack of the sound.

5: RV5: Reverb Room
This room-type reverb emphasizes the early reflections that make the sound tighter. Changing the balance between the early reflections and reverb sound allows you to simulate nuances, such as the type of walls of a room.

6: RV6: Bright Room
This room-type reverb emphasizes the early reflections that make the sound brighter.

Time (Reverb Time [sec])	0.1...3.0s	Sets the reverberation time
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
PreDly (Pre Delay [msec])	0...200ms	Sets the delay time from the dry sound
Thru (Pre Delay Thru [%])	0...100	Sets the mix ratio of non-delay sound
ERLvl (ER Level)	0...100	Sets the level of early reflections
RvbLvl (Reverb Level)	0...100	Sets the reverberation level
EQTrim (EQ Trim)	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15...+15dB	Sets the gain of High EQ
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: ER Level, : Reverb Level
These parameters set the early reflection level and reverb level. Changing these parameter values allows you to simulate the type of walls in the room. That is, a larger "ER Level" simulates a hard wall, and a larger "Reverb Level" simulates a soft wall.

7: RV7: Early Reflection
This effect is only the early reflection part of a reverberation sound, and adds presence to the sound. You can select one of the four decay curves.

Type (Type)	Sharp, Loose, Modula, Revers	Selects the decay curve for the early reflection
ERTime (ER Time [msec])	10...800ms	Sets the time length of early reflection
PreDly (Pre Delay [msec])	0...200ms	Sets the time taken from the original sound to the first early reflection
EQTrim (EQ Trim)	0...100	Sets the input level of EQ applied to the effect sound
LEQG (Pre LEQ Gain [dB])	–15.0...+15.0	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15.0...+15.0	Sets the gain of High EQ
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Type
This parameter selects the decay curve for the early reflection.

Delay DL1 – DL6
Category: Delay-type effects

8: DL1: L/C/R Delay
This multitap delay outputs three Tap signals to the left, right, and center respectively. You can also adjust the left and right spread of the delay sound.

LTime (L Delay Time [msec])	0...1360ms	Sets the delay time of TapL
LLevel (Level)	0...50	Sets the output level of TapL
CTime (C Delay Time [msec])	0...1360ms	Sets the delay time of TapC
CLevel (Level)	0...50	Sets the output level of TapC
RTime (R Delay Time [msec])	0...1360ms	Sets the delay time of TapR
RLevel (Level)	0...50	Sets the output level of TapR
Fdback (Feedback (C Delay))	–100...+100	Sets the feedback amountof TapC

HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
LoDamp (Low Damp [%])	0...100	Sets the damping amount in the low range
Spread (Spread)	0...50	Sets the width of the stereo image of the effect sound
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: High Damp [%], : Low Damp [%]
These parameters set the damping amount of high range and low range. The tone of the delayed sound becomes darker and lighter as it feeds back.

: Spread
This parameter sets the pan width of the effect sound. The stereo image is widest with a value of "**50**," and the effect sound of both channels is output from the center with a value of "**0**."

9: DL2: St/Cross Delay (Stereo/Cross Delay)

This is a stereo delay, and can by used as a cross-feedback delay effect in which the delay sounds cross over between the left and right by changing the feedback routing.

Mode (Stereo/Cross)	Stereo, Cross	Switches between stereo delay and cross-feedback delay
LTime (L Delay Time [msec])	0...680ms	Sets the delay time for the left channel
RTime (R Delay Time [msec])	0...680ms	Sets the delay time for the right channel
LFback (L Feedback)	–100...+100	Sets the feedback amount for the left channel
RFback (R Feedback)	–100...+100	Sets the feedback amount for the right channel
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
LoDamp (Low Damp [%])	0...100	Sets the damping amount in the low range
Spread (Spread)	–50...+50	Sets the width of the stereo image of the effect sound
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

10: DL3: St.Multitap Delay (Stereo Multitap Delay)

The left and right Multitap Delays have two taps respectively. Changing the routing of feedback and tap output allows you to create various patterns of complex effect sounds.

Mode (Mode)	Normal, X.Fback, X.Pan1, X.Pan2	Switches the left and right delay routing
T1Time (Tap1 Time [msec])	0...680ms	Sets the Tap1 delay time
T2Time (Tap2 Time [msec])	0...680ms	Sets the Tap2 delay time
T1Lvl (Tap1 Level)	0...100	Sets the Tap1 output level
Fdback (Feedback)	–100...+100	Sets the Tap2 feedback amount
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
LoDamp (Low Damp [%])	0...100	Sets the damping amount in the low range
Spread (Spread)	–100...+100	Sets the width of the stereo image of the effect sound
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Mode
The left/right panning of the delay can be modified by changing the connections of the left and right delay. Be aware that different sounds must be input to the left and right channels in order for this parameter to be effective.

: Tap1 Level
This parameter sets the output level of Tap1. Setting a different level from Tap2 will add a unique touch to a monotonous delay and feedback.

11: DL4: St.Modulation Delay (Stereo Modulation Delay)

This stereo delay uses an LFO to sweep the delay time. The pitch also varies. You will obtain a delay sound with swell and shimmering.

LFO (LFO Waveform)	TRI, SIN	Selects LFO Waveform
Shape (LFO Shape)	–100...+100	Determines how much the LFO waveform is changed
*Speed (LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
LPhase (L LFO Phase [degree])	–180...+180	Sets the phase obtained when the left LFO is reset
RPhase(R LFO Phase [degree])	–180...+180	Sets the phase obtained when the right LFO is reset
*LDepth (L Depth)	0...200	Sets the depth of the left LFO modulation
*RDepth (R Depth)	0...200	Sets the depth of the right LFO modulation
LTime (L Delay Time [msec])	0...500	Sets the delay time for the left channel
RTime (R Delay Time [msec])	0...500	Sets the delay time for the right channel
LFback (L Feedback)	–100...+100	Sets the feedback amount of left delay
RFback (R Feedback)	–100...+100	Sets the feedback amount of right delay
Mix (Wet/Dry)	–Wet...–1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds

: L LFO Phase [degree], : R LFO Phase [degree]
"L LFO Phase" and "R LFO Phase" specify the phase difference between the two LFO's when they are reset. This allows the pitch change of the sweep to be set independently for left and right.

12: DL5: St.Dynamic Delay (Stereo Dynamic Delay)

This stereo delay controls the level of delay according to the input signal level. You can use this as a ducking delay that applies delay to the sound only when you input signals at a high velocity or only when the volume level is low.

Contrl (Control Target)	None, Out, FB	Selects from no control, output, and feedback
Polrty (Polarity)	+, –	Reverses level control
Thrshl (Threshold)	0...100	Sets the level to which the effect is applied
Offset (Offset)	0...100	Sets the offset of level control
Attack (Attack)	1...100	Sets the attack time of level control
Relse (Release)	1...100	Sets the release time of level control
LTime (L Delay Time [msec])	0...680ms	Sets the delay time for the left channel
RTime (R Delay Time [msec])	0...680ms	Sets the delay time for the right channel
Fdback (Feedback)	–100...+100	Sets the feedback amount
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
LoDamp (Low Damp [%])	0...100	Sets the damping amount in the low range
Spread (Spread)	–100...+100	Sets the width of the stereo image of the effect sound
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Control Target
This parameter selects no level control, delay output control (effect balance), or feedback amount control.

: Polarity, :Threshold, :Offset, :Attack, :Release
The "Offset" parameter specifies the value for the "Control Target" parameter (when level control is not being applied), expressed as a ratio relative to the parameter setting. The parameter setting will be the "Wet/Dry" value if "Control Target"="**Out**," or the "Feedback" value if "Control Target"="**FB**."
When "Polarity" is "**+**", the "Control Target" value is obtained by multiplying the parameter value by the "Offset" value (if the input level is below "Threshold"), or will equal the parameter value if the input level exceeds the threshold.
When "Polarity" is "**–**", the Control Target value will equal the parameter value if the input level is below "Threshold", or is obtained by multiplying the parameter value by the "Offset" value if the input level exceeds "Threshold."

The "Attack" and "Release" parameters specify attack time and release time of delay level control.

13: DL6: St.Auto Panning Delay (Stereo Auto Panning Delay)

This stereo delay effect pans the delay sound left and right using the LFO.

LTime (L Delay Time [msec]) ..... 0...680ms	Sets the delay time for the left channel
LFback (L Feedback) ..... –100...+100	Sets the feedback amount for the left channel
RTime (R Delay Time [msec]) ..... 0...680ms	Sets the delay time for the right channel
RFback (R Feedback) ..... –100...+100	Sets the feedback amount for the right channel
HiDamp (High Damp [%]) ..... 0...100	Sets the damping amount in the high range
LoDamp (Low Damp [%]) ..... 0...100	Sets the damping amount in the low range
LFO (LFO Waveform) ..... TRI, SIN	Selects LFO Waveform
Shape (LFO Shape) ..... –100...+100	Determines how much the LFO waveform is changed
Phase (LFO Phase [degree]) ... –180...+180	Sets the LFO phase difference between the left and right
*Speed(Panning Frequency [Hz]) ..... 0.02...20.0Hz	Sets the panning speed
*Depth (Panning Depth) ..... 0...100	Sets the panning width
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

Modulation MO1– MO7
Category: Modulation-type effects

14: MO1: St.Chorus (Stereo Chorus)

This effect adds thickness and warmth to the sound by modulating the delay time of the input signal. A two-band equalizer can be used to adjust the tone of the effect sound. You can control the spaciousness of the sound by offsetting the phase of the left and right LFOs from each other.

LFO (LFO Waveform) ..... TRI, SIN	Selects LFO Waveform
Phase (LFO Phase [degree]) ... –180...+180	Sets the LFO phase difference between the left and right
*Speed (LFO Frequency [Hz])..0.02...20.0Hz	Sets the LFO speed
LDly (L Pre Delay [msec])..... 0.0...50.0ms	Sets the delay time for the left channel
RDly (R Pre Delay [msec]) ..... 0.0...50.0ms	Sets the delay time for the right channel
*Depth (Depth) ..... 0...100	Sets the depth of LFO modulation
EQTrim (EQ Trim) ..... 0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB]) .... –15.0...+15.0	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB]) ... –15.0...+15.0	Sets the gain of High EQ
Mix (Wet/Dry) .....–Wet...–1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds

: L Pre Delay [msec], : R Pre Delay [msec]
Setting the left and right delay time individually allows you to control the stereo image.

15: MO2: St.Flanger (Stereo Flanger)

This effect gives a significant swell and movement of pitch to the sound. It is more effective when applied to a sound with a lot of harmonics. This is a stereo flanger. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other.

Time (Delay Time [msec]) ..... 0.0...50.0ms	Sets the delay time from the original sound
LFO (LFO Waveform) ..... TRI, SIN	Selects LFO Waveform
Shape (LFO Shape) ..... –100...+100	Determines how much the LFO waveform is changed
Phase (LFO Phase [degree]) ... –180...+180	Sets the LFO phase difference between the left and right
*Speed (LFO Frequency [Hz])..0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ..... 0...100	Sets the depth of LFO modulation
Fdback (Feedback) ..... –100...+100	Sets the feedback amount
HiDamp (High Damp [%]) ..... 0...100	Sets the feedback damping amount in the high range
Mix (Wet/Dry) ..... –Wet...–1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds

: LFO Shape
Changing the LFO waveform shape controls the peak sweep of flanging effects.

: Feedback, : Wet/Dry
The peak shape of the positive and negative "Feedback" value is different. The harmonics will be emphasized when the effect sound is mixed with the dry sound if you set a positive value for both "Feedback" and "Wet/Dry", and if you set a negative value for both "Feedback" and "Wet/Dry".

: High Damp [%]
This parameter sets the amount of damping of the feedback in the high range. Increasing the value will cut high-range harmonics.

16: MO3: St.Phaser (Stereo Phaser)

This effect creates a swell by shifting the phase. It is very effective on electric piano sounds. This is a stereo effect, and you can control the spaciousness of the sound by offsetting the phase of the left and right LFOs from each other.

LFO (LFO Waveform) ..... TRI, SIN	Selects LFO Waveform
Shape (LFO Shape) ..... –100...+100	Determines how much the LFO waveform is changed
Phase (LFO Phase [degree]) ... –180...+180	Sets the LFO phase difference between the left and right
*Speed (LFO Frequency [Hz])..0.02...20.0Hz	Sets the LFO speed
Manual (Manual)..... 0...100	Sets the frequency to which the effect is applied
*Depth (Depth) ..... 0...100	Sets the depth of LFO modulation
Reso (Resonance) ..... –100...+100	Sets the resonance amount
HiDamp (High Damp [%]) ..... 0...100	Sets the resonance damping amount in the high range
Mix (Wet/Dry) ..... –Wet...–1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds

: Resonance, : Wet/Dry
The peak shape of the positive and negative Feedback value is different. The harmonics will be emphasized when the effect sound is mixed with the dry sound, if you set a positive value for both "Resonance" and "Wet/Dry", and if you set a negative value for both "Resonance" and "Wet/Dry".

: High Damp [%]
This parameter sets the amount of damping of the resonance in the high range. Increasing the value will cut high-range harmonics.

17: MO4: St.Vibrato (Stereo Vibrato)

This effect causes the pitch of the input signal to shimmer. You can use an expression pedal etc. to gradually increase or decrease the shimmering speed.

LFO (LFO Waveform) ..... TRI, SIN	Selects LFO Waveform
Shape (LFO Shape) ..... –100...+100	Determines how much the LFO waveform is changed
*Speed (LFO Frequency [Hz])..0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ..... 0...100	Sets the depth of LFO modulation
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

18: MO5: St.Tremolo (Stereo Tremolo)

This effect modulates the volume level of the input signal. The effect is stereo, and offsetting the LFO of the left and right phases from each other produces a tremolo effect between left and right.

LFO (LFO Waveform)	TRI, SIN, Vintage, Up, Down	Selects LFO Waveform
Shape (LFO Shape)	–100...+100	Determines how much the LFO waveform is changed
Phase (LFO Phase [degree])	–180...+180	Sets the LFO phase difference between the left and right
*Speed (LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: LFO Waveform

This parameter selects the LFO waveform. "**Vintage**" wave simulates the characteristics of the tremolo created on a guitar amplifier. Combining this effect with the Amp Simulation will make a realistic, vintage tremolo amplifier sound.

: LFO Phase [degree]

This parameter determines the difference between the left and right LFO phases. A higher value will simulate the auto-pan effect in which the sound is panned between left and right.

19: MO6: St.Auto Pan (Stereo Auto Pan)

This Auto Pan effect pans sound between left and right. It is stereo, and shifting the left and right LFO phases from each other will simulate the sound of the left and right channels crossing over each other by turns, or chasing each other.

LFO (LFO Waveform)	TRI, SIN	Selects LFO Waveform
Shape (LFO Shape)	–100...+100	Determines how much the LFO waveform is changed
Phase (LFO Phase [degree])	–180...+180	Sets the LFO phase difference between the left and right
*Speed (LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: LFO Shape

You can change the panning curve by modifying the LFO waveform.

: LFO Phase

This parameter determines the difference in the left and right LFO phases. When you change the value gradually from "**0**," the sound from the left and right channels will chase each other around. If you set the parameter to" **+180**" or "**–180**," the sound from each channel will cross over each other. You need to input different sounds to each channel in order for this parameter to be effective.

20: MO7: Ensemble

This Ensemble effect has three chorus blocks that use LFO to create subtle shimmering, and gives three dimensional depth and spread to the sound, because the signal is output from the left, right, and center.

*Speed (Speed)	1...100	Sets the LFO speed
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Shimmr (Shimmer)	0...100	Sets the amount of shimmering of the LFO waveform
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Shimmer

This parameter sets the amount of shimmering of the LFO waveform. Increasing this value adds more shimmering, making the chorus effect more complex and richer.

Dynamics DY1 – DY7

Category: Dynamics-type effects

21: DY1: St.Compressor (Stereo Compressor)

This effect compresses the input signal to regulate the level and give a "punchy" effect. It is useful for guitar, piano, and drum sounds. This is a stereo compressor. You can link left and right channels, or use each channel separately.

Envelp (Envelope Select)	L/RMix, Indivi	Determines whether the left and right channels are linked or used separately
Sens (Sensitivity)	1...100	Sets the sensitivity
Attack (Attack)	1...100	Sets the attack level
EQTrim (EQ Trim)	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15.0...+15.0	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15.0...+15.0	Sets the gain of High EQ
Level (Output Level)	0...100	Sets the output level of the compressor
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Envelope Select

This parameter selects whether the left and right channels are linked to control both signals simultaneously, or whether each channel is controlled independently.

: Sensitivity, : Output Level

The "Sensitivity" parameter sets the sensitivity of the compressor. If this parameter is set to a higher value, lower level sounds will be boosted. With a higher Sensitivity, the overall volume level is higher. To adjust the final volume level, use the "Output Level" parameter.

: Attack

Controls the strength of the attack that is characteristic of a compressor.

22: DY2: St.Limiter (Stereo Limiter)

The Limiter regulates the input signal level. It is similar to the Compressor, except that the Limiter compresses only signals that exceed the specified level to lower unnecessary peak signals. The Limiter applies a peaking-type EQ to the trigger signal (which controls the degree of the Limiter effect), allowing you to set any band width to be covered. This effect is a stereo limiter. You can link left and right channels, or use each channel individually.

Envelp (Envelope Select)	L/RMix, L Only, R Only, Indivi	Selects from linking both channels, controlling only from left channel, only from the right channel, or controlling each channel individually
Ratio (Ratio)	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrshl (Threshold [dB])	–40...0dB	Sets the level above which the compressor is applied
Attack (Attack)	1...100	Sets the attack time
Relse (Release)	1...100	Sets the release time
GLevel (Gain Adjust [dB])	–Inf, –38...+24dB	Sets the output gain
SPEQ (Side PEQ Insert)	Off, On	Toggles between on/off of the trigger signal's EQ
Triggr (Trigger Monitor)	Off, On	Switches between effect output monitor and trigger signal monitor
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds
Fc (Side PEQ Cutoff [Hz])	20...12.0kHz	Sets the EQ center frequency for the trigger signal
Q (Q)	0.5...10.0	Sets the EQ bandwidth for the trigger signal
Gain (Gain [dB])	–18.0...+18.0	Sets the EQ gain for the trigger signal

: Envelope Select

When "**L/R Mix**" is selected for this parameter, the left and right channels are linked to control the Limiter using the mixed signal.

If "**L Only**" (or "**R Only**") is selected, the left and right channels are linked, and the Limiter is controlled via only the left (or right) channel.
With "**indivi**", the left and right channels control the Limiter individually.

: Ratio, : Threshold [dB], : Gain Adjust [dB]
This parameter sets the signal compression "Ratio". Compression is applied only when the signal level exceeds the "Threshold" value.
In the case of the limiter, applying compression will lower the overall level, so you should use "Gain Adjust" to make adjustments.

: Attack, : Release
These parameters set the attack time and release time. A higher attack time will cause the compression to be applied more slowly.

: Side PEQ Insert, : Side PEQ Cutoff [Hz], : Q, : Gain [dB]
These parameters are used to set the EQ applied to the trigger signal.
The Limiter determines whether the compression is applied or not, based on the post-EQ trigger signal. Setting the equalizer allows you to set the Limiter to respond to any frequency band.

: Trigger Monitor
Setting this parameter "**On**" will cause the trigger signal to be output, instead of the effect sound. Use this parameter to check the trigger signal with EQ applied.
Usually, set this to "**Off**."

23: DY3: Multiband Limiter

This effect applies the Limiter to the low range, mid range, and high range of the input signal. You can control dynamics for each range to adjust the sound pressure of the low range, mid range, and high range in a different way from the EQ.

Ratio (Ratio) ..... 1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrshl (Threshold [dB]).....–40...0dB	Sets the level above which the compressor is applied
Attack (Attack) ..... 1...100	Sets the attack time
Relse (Release)..... 1...100	Sets the release time
LoOfst (Low Offset [dB]).....–40...0dB	Sets the low range gain of trigger signal
MdOfst (Mid Offset [dB]).....–40...0dB	Sets the mid range gain of trigger signal
HiOfst (High Offset [dB]).....–40...0dB	Sets the high range gain of trigger signal
GLevel (Gain Adjust [dB]) .–Inf, –38...+24dB	Sets the output gain
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Low Offset [dB], : Mid Offset [dB], : High Offset [dB]
These parameters set the gain of the trigger signal.
For example, if you do not want to apply compression to the high range, reduce the "High Offset" value down below the "Threshold" level. In this way, the high range limiter will not respond, and compression will not be applied.

24: DY4: St.Gate (Stereo Gate)

This effect mutes the input signal if its level is lower than the specified level. It also reverses the on and off operation of the gate, and uses Note On and Off messages to turn the gate on and off.

Envelp (Envelope Select) .... L/RMix, L Only, R Only	Selects from Control via the modulation source, mixing the left and right signals, Only left, and Only right
Polrty (Polarity)..... +, –	Switches between non-reversed and reversed Gate on/off
Thrshl (Threshold)..... 0...100	Sets the level to which the Gate is applied
Attack (Attack) ..... 1...100	Sets the attack time
Relse (Release)..... 1...100	Sets the release time
DTime (Delay Time [msec])..... 0...100ms	Sets the delay time of the gate input
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

With "Envelope Select" = "**L/R Mix**," the left and right channel signal mixture will trigger the gate on/off. When "**L Only**" or "**R Only**" is selected, the gate is controlled by either of the channel signals.

: Polarity
This parameter reverses the Gate on/off operation. With a negative value, the gate is closed when the input signal level exceeds the Threshold.

: Attack, : Release
The Attack and Release parameters set the Gate attack time and release time.

: Delay Time
This parameter sets the delay time of the Gate input. If the sound has a very fast attack, increase the delay time so that the signal will be input after the Gate is opened.

25: DY5: St.Exciter/Enhancer (Stereo Exciter/Enhancer)

This effect is a combination of the Exciter, which adds a punch to the sound and the Enhancer, which adds spread and presence.

Blend (Exciter Blend).....–100...+100	Sets the intensity (depth) of the Exciter effect
Empha (Emphatic Point)..... 0...140	Sets the frequency to be emphasized
LDly (Enhancer Dly L [msec]).. 0.0...50.0ms	Sets the delay time for the Enhancer left channel
RDly (Enhancer Dly R [msec]) 0.0...50.0ms	Sets the delay time for the Enhancer right channel
*Depth (Enhancer Depth)..... 0...100	Sets the determines to what degree the Enhancer effect is applied
EQTrim (EQ Trim) ..... 0...100	Sets the 2-band EQ input level
LEQG (Pre LEQ Gain [dB]) –15.0...+15.0dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])–15.0...+15.0dB	Sets the gain of High EQ
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Exciter Blend
This parameter sets the depth (intensity) of the Exciter effect. Positive values give a frequency pattern (to be emphasized) different from negative values.

: Emphatic Point
This parameter sets the frequency to be emphasized. Higher values will emphasize lower frequencies.

: Enhancer Dly L [msec], : Enhancer Dly R [msec]
These parameters set the delay time for the Enhancer left and right channel. Specifying a slightly different delay time for the left and right channel will add a stereo image, depth, and width to the sound.

26: DY6: St.Decimator (Stereo Decimator)

This effect creates a rough sound like a cheap sampler by lowering the sampling frequency and data bit length. You can also simulate noise unique to a sampler (aliasing).

LPF (Pre LPF) .....Off, On	Selects whether the harmonic noise caused by a decrease in sampling frequency is generated or not
Fs (Sampling Frequency [Hz])...1.0k...44.1k	Sets the sampling frequency
Bit (Resolution)..... 4...24	Sets the data bit length
Speed (LFO Frequency [Hz]) .0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ..... 0...100	Sets the depth of the sampling frequency modulation
HiDamp (High Damp [%])..... 0...100	Sets the ratio of cut of the high range
Level (Output Level) ..... 0...100	Sets the output level
Mix (Wet/Dry) .....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Pre LPF
If a sampler with a very low sampling frequency receives very high-pitched sound that could not be heard during playback, it could generate pitch noise that is unrelated to the original sound.

Set "Pre LPF" to "**On**" to prevent this noise from being generated. If you set the "Sampling Frequency" to about "**3kHz**" and set "Pre LPF" to "**Off**," you can create a sound like a ring modulator.

: Resolution, : Output Level
If you set a smaller value for the "Resolution" parameter, the sound may be distorted. The volume level may also be changed. Use "Output Level" to adjust the level.

27: DY7: St.Parametric 4band EQ
(Stereo Parametric 4band EQ)

This is a stereo 4-band parametric equalizer. You can select peaking type or shelving type for Band 1 and 4.

Trim (Trim)	0...100	Sets the input level
B1Type (Band1 Type)	Peaking, ShelvL	Selects the type of Band 1
B4Type (Band4 Type)	Peaking, ShelvH	Selects the type of Band 4
Fc1 (Band1 Cutoff [Hz])	20...1.0kHz	Sets the center frequency of Band 1
Q1 (Q)	0.5...10.0	Sets the bandwidth of Band 1
G1 (Gain [dB])	–18.0...+18.0	Sets the gain of Band 1
Fc2 (Band2 Cutoff [Hz])	50...10.0kHz	Sets the center frequency of Band 2
Q2 (Q)	0.5...10.0	Sets the bandwidth of Band 2
G2 (Gain [dB])	–18.0...+18.0	Sets the gain of Band 2
Fc3 (Band3 Cutoff [Hz])	300...10.0kHz	Sets the center frequency of Band 3
Q3 (Q)	0.5...10.0	Sets the bandwidth of Band 3
G3 (Gain [dB])	–18.0...+18.0	Sets the gain of Band 3
Fc4 (Band4 Cutoff [Hz])	500...20.0kHz	Sets the center frequency of Band 4
Q4 (Q)	0.5...10.0	Sets the bandwidth of Band 4
G4 (Gain [dB])	–18.0...+18.0	Sets the gain of Band 4
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Band1 Type, : Band4 Type
Selects a filter type for Band 1 and 4.

Special Effect SE1 – SE4
Category: Special Effect

28: SE1: St.Ring Modulator
(Stereo Ring Modulator)

This effect creates a metallic sound by applying the oscillators to the input signal.

LPFLvl (Pre LPF)	0...100	Sets the damping amount of the high range input to the ring modulator
Fc (Fixed Frequency [Hz])	0...12.0kHz	Sets the oscillator frequency when OSC Mode is set to Fixed
Speed (LFO Frequency [Hz])	.0.02...20.0Hz	Sets the LFO speed of the oscillator frequency modulation
Depth (LFO Depth)	0...100	Sets the depth of LFO modulation for the oscillator frequency
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Pre LPF
This parameter enables you to set the damping amount of the high range sound input to the ring modulator. If the input sound contains lots of harmonics, the effect may sound dirty. In this case, cut a certain amount of high range.

: Fixed Frequency [Hz]
This parameter sets the oscillator frequency.

29: SE2: Doppler

This effect simulates the "Doppler effect" of a moving sound with a changing pitch, similar to the siren of an passing ambulance. Mixing the effect sound with the dry sound will create a unique chorus effect.

*Speed (LFO Frequency [Hz])	.0.02...20.0Hz	Sets the LFO speed
*Pitch (Pitch Depth)	0...100	Sets the pitch variation of the moving sound
*Pan (Pan Depth)	–100...+100	Sets the panning of the moving sound
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Pitch Depth
With the Doppler effect, the pitch is raised when the sound approaches, and the pitch is lowered when the sound goes away. This parameter sets this pitch variation.

: Pan Depth
This parameter sets the width of the stereo image of the effect sound. With larger values, the sound seems to come and go from much further away. With positive values, the sound moves from left to right; with negative values, the sound moves from right to left.

30: SE3: St.Analog Record
(Stereo Analog Record)

This effect simulates the noise caused by scratches and dust on analog records. It also reproduces some of the modulation caused by a warped turntable.

RPM (Speed [RPM])	33 1/3, 45, 78	Sets the r.p.m. of a record
*Wah (Flutter)	0...100	Sets the modulation depth
NsDens (Noise Density)	0...100	Sets the noise density
NsTone (Noise Tone)	0...100	Sets the noise tone
NsLvl (Noise Level)	0...100	Sets the noise level
ClkLvl (Click Level)	0...100	Sets the click noise level
EQTrim (EQ Trim)	0...100	Sets the EQ input level
Fc (Pre EQ Cutoff [Hz])	300...10.0kHz	Sets the EQ center frequency
Q (Q)	0.5...10.0	Sets the EQ band width
GLevel (Gain [dB])	–18.0..+18.0	Sets the EQ gain
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Flutter
This parameter enables you to set the depth of the modulation caused by a warped turntable.

: Click Level
This parameter enables you to set the level of the click noise that occurs once every rotation of the turntable. This simulation reproduces record noise, and the noise generated after the music on a vinyl record finishes.

31: SE4: Talking Modulator

This effect gives the input signal a character similar to a human voice. It can create the impression of a talking guitar or synthesizer.

*Speed (LFO Frequency [Hz])	0.02...20.00Hz	Sets the LFO speed
VTop (Voice Top)	A, I, U, E, O	Selects a vowel sound at the top end of control
VCentr (Voice Center)	A, I, U, E, O	Selects a vowel sound in the center of control
VBotom (Voice Bottom)	A, I, U, E, O	Selects a vowel sound at the bottom end of control
Formnt (Formant Shift)	–100...+100	Sets the frequency to which the effect is applied
Reso (Resonance)	0...100	Sets the Level of resonance of the voice pattern
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Formant Shift
This parameter adjusts the frequency level to which the effect is applied. If you wish to apply the effect to a higher-range sound, set this parameter to a higher value; to apply the effect to a lower-range sound, set this to a lower value.

: Resonance
This parameter sets the intensity of resonance for the voice pattern. A larger value will add more character to the sound.

Insert (2in2outx2), Final

These algorithms can be selected for an **insert effect** if "**2in2outx2**" is selected for "Select Eff Type". They can also be selected for a **final effect**.

Large size LS1 – LS7
Category: Large size effects

32: LS1: St.Graphic 7band EQ
(Stereo Graphic 7band EQ)

This is a stereo 7-band graphic equalizer. The bar graph of the gain setting for each band gives you a clear, visual idea of frequency responses. You can select a center frequency setting for each band from twelve types, according to the sound.

Type (Type) 1:Wide1, 2:Wide2, 3:Wide3, 4:HalfW1, 5:HalfW2, 6:HalfW3, 7:Low, 8:WideLo, 9:Mid, 10:WideM, 11:High, 12:WideHi	Selects a combination of center frequencies for each band
Trim (Trim) ..... 0...100	Sets the input level
B1 (Band1 [dB]) ..... –18...+18	Sets the gain of Band 1
B2 (Band2 [dB]) ..... –18...+18	Sets the gain of Band 2
B3 (Band3 [dB]) ..... –18...+18	Sets the gain of Band 3
B4 (Band4 [dB]) ..... –18...+18	Sets the gain of Band 4
B5 (Band5 [dB]) ..... –18...+18	Sets the gain of Band 5
B6 (Band6 [dB]) ..... –18...+18	Sets the gain of Band 6
B7 (Band7 [dB]) ..... –18...+18	Sets the gain of Band 7
Mix (Wet/Dry) ..... Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Type
This parameter selects a combination of center frequencies for each band.

33: LS2: St.Multiband Limiter
(Stereo Multiband Limiter)

This is a stereo multiband limiter.

Ratio (Ratio) ..... 1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrshl (Threshold [dB]) ..... –40...0dB	Sets the level above which the compressor is applied
Attack (Attack) ..... 1...100	Sets the attack time
Relse (Release) ..... 1...100	Sets the release time
LoOfst (Low Offset [dB]) ..... –40...0dB	Sets the low range gain of trigger signal
MdOfst (Mid Offset [dB]) ..... –40...0dB	Sets the mid range gain of trigger signal
HiOfst (High Offset [dB]) ..... –40...0dB	Sets the high range gain of trigger signal
GLevel (Gain Adjust [dB]) . –Inf, –38...+24dB	Sets the output gain
Mix (Wet/Dry) ..... Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

34: LS3: Vocoder

This effect applies the character of the right channel signal (Modulator) to the left channel signal input (Carrier). A common use of this effect is to produce the sound of various instruments by inputting a voice to the Modulator via a microphone. A special effect is also achieved by using rhythm or effect sounds. Strings or distortion guitar sounds with a lot of harmonics are suitable as a Carrier.

Carri (L [Carrier] Trim) ..... 0...100	Sets the input level of left channel (Carrier)
Modul (R [Modulator] Trim) ..... 0...100	Sets the input level of right channel (Modulator)
Formnt (Formant Shift) ..... –2...+2	Sets the height of the frequency for the vocoder effect
Respo (Response) ..... 0...100	Sets the speed of the response to the modulator input
NLevel (Noise Level) ..... 0...100	Sets the noise mix level to the Carrier
LoGain (Low Gain [dB]) ..... –12...+12	Sets the low-range output level of the vocoder
HiGain (High Gain [dB]) ..... –12...+12	Sets the high-range output level of the vocoder
HiMix (Modulator High Mix) ..... 0...100	Sets the high-range output level of the modulator
Bal (Vocoder/Carrier) .... Carrier, 1:99...99:1, Vocode	Sets the balance between the vocoder output and the Carrier
Mix (Wet/Dry) ..... Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Formant Shift
By offsetting the Carrier filter, you can adjust the height of the frequency range to which the vocoder effect is applied. The tonal quality will change significantly.

: Noise Level
This parameter enables you to mix white noise with the Carrier.

: Modulator High Mix
This parameter sets the high-range output level of the right channel sound (Modulator). If the modulator is a human voice, it will make the words more clear.

: Vocoder/Carrier, : Wet/Dry
The "Vocoder/Carrier" parameter sets the balance between the vocoder sound and the left channel sound (Carrier). The "Wet/Dry" parameter sets the balance between the effect and dry sound. If you wish to change the intensity of the vocoder effect, select "**Wet**" for "Wet/Dry", and adjust the balance using the "Vocoder/Carrier" parameter.

35: LS4: St.Pitch Shifter
(Stereo Pitch Shifter)

This is a stereo pitch shifter. The pitch shift amount for the left and right channels can be reversed from each other.

Mode (Mode) ..... Slow, Medium, Fast	Switches Pitch Shifter mode
L/R (L/R Pitch) ..... Normal, Up/Dwn	Determines whether or not the L/R pitch shift amount is inverted
*Pitch (Pitch Shift [1/2tone]) ..... –24...+24	Sets the pitch shift amount in steps of a semitone
Fine (Fine [cent]) ..... –100...+100c	Sets the pitch shift amount in steps of one cent
LDly (Lch Delay [msec]) ..... 0...1000ms	Sets the delay time for the left channel
RDly (Rch Delay [msec]) ..... 0...1000ms	Sets the delay time for the right channel
FPoint (Feedback Position) ..... Pre, Post	Switches the feedback connection
Fdback (Feedback) ..... –100...+100	Sets the feedback amount
HiDamp (High Damp [%]) ..... 0...100	Sets the damping amount in the high range
Spread (Spread) ..... –100...+100	Sets the width of the stereo image of the effect sound
Mix (Wet/Dry) ..... Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: L/R Pitch
When you select "**Up/Dwn**" for this parameter, the pitch shift amount for the right channel will be reversed. If the pitch shift amount is positive, the pitch of the left channel is raised, and the pitch of the right channel is lowered. If an expression pedal etc. is used to control the pitch, the pitch of the left channel will be controlled.

: Mode, Fine
If Cntrl is controlling Pitch and you change Mode or Fine, you must once again use Cntrl to readjust the Max and Min parameters.

36: LS5: Early Reflections L

This early reflection effect has more precise early reflections with twice the maximum length of a normal-size effect. You can create a very smooth and dense sound.

Type (Type) .....Sharp, Loose, Modula, Revers	Selects the decay curve for the early reflection
Time (ER Time [msec]) ..... 10...1600ms	Sets the time length of early reflection
PreDly (Pre Delay [msec]) ..... 0...200ms	Sets the time taken from the original sound to the first early reflection
EQTrim (EQ Trim) ..... 0...100	Sets the input level of EQ applied to the effect sound
LEQG (Pre LEQ Gain [dB]) .... –15.0...+15.0	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB]) ... –15.0...+15.0	Sets the gain of High EQ
Mix (Wet/Dry).....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

37: LS6: Rotary Speaker

This effect simulates a rotary speaker, and obtains a more realistic sound by simulating the rotor in the low range and the horn in the high range separately. The effect also simulates the stereo microphone settings.

ODSW (OverDrive SW) .....Off, On	Overdrive on/off
DGain (OverDrive Gain) ..... 0...100	Degree of distortion
DLevel (OverDrive Level)..... 0...100	Output level of overdrive
DTone (OverDrive Tone) ..... 0...15	Tone of overdrive
SPsim (Speaker Simulator) .....Off, On	Speaker simulation on/off
Mode (Mode Switch)..... Rotate, Stop	Switches between speaker rotation and stop
Speed (Speed Switch).....Slow, Fast	Switches the speaker rotation speed between slow and fast
RotAcc (Rotor Acceleration)..... 0...100	Determines how quickly the rotor rotation speed in the low range is switched
Rotor (Rotor Ratio) .....Stop, 0.50...2.00	Adjusts the (low-range side) rotor rotation speed. Standard value is 1.00. Selecting "Stop" will stop the rotation
HrnAcc (Horn Acceleration)..... 0...100	How quickly the horn rotation speed in the high range is switched
Horn (Horn Ratio).....Stop, 0.50...2.00	Adjusts the (high-range side) horn rotation speed. Standard value is 1.00. Selecting "Stop" will stop the rotation
HRBal (Horn/Rotor Balance) ..... Rotor, 1...99, Horn	Sets the level balance between the high-range horn and low-range rotor
MicDst (Mic Distance)..... 0...100	Sets the distance between the microphone and rotary speaker
Spread (Mic Spread) ..... 0...100	Sets the angle of left and right microphones
Mix (Wet/Dry).....Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Horn Acceleration, : Rotor Acceleration

On a real rotary speaker, the rotation speed is accelerated or decelerated gradually after you switch the speed. The "Horn Acceleration" parameter sets the speed at which the rotation is accelerated or decelerated.

: Mic Distance, : Mic Spread

This is a simulation of stereo microphone settings.

38: LS7: Center Canceller

When a stereo music source is input to this effect, parts that are panned to the center (such as vocals and lead guitar) will be erased. In addition, you can control the pitch.

Pitch (Pitch) .....–12...0...+12	Sets the amount of pitch shift in steps of a semitone
Adjust (Adjust) ..... L50...CNT...R50	Sets the cancelling position
Himix (Center Hi mix) ..... 0...100	Sets the mixing amount of the high-frequency portion of the center position
Lomix (Center Lo mix) ..... 0...100	Sets the mixing amount of the low-frequency portion of the center position

Insert (1in2outx2)

These algorithms can be selected for an **insert effect** if "Select Eff Type" is set to "**1in2outx2**".

Effects **GT1–VO2** are multi-effects for guitar/bass/vocal, and contain three to five effects connected in series.

Example

Algorithm number: Category number: Algorithm name
[Name of effect in the chain]

39: GT1: Guitar Multi1
[Dist, NR, Cho/Fl, S.Dly]

The chain structure of each multi-effect is shown below.

For an explanation of the parameters of each effect in the chain, refer to "Effects within multi-effect programs GT1–VO2, and their parameters" on the following page.

GT1 – GT6
Category: Guitar multi

39: GT1: Guitar Multi1
[Dist, NR, Cho/Fl, S.Dly]

40: GT2: Guitar Multi2
[Wah, Dist, NR, Delay]

41: GT3: Guitar Multi3
[Dist, NR, AmpSim, CabRes, Delay]

42: GT4: Guitar Multi4
[Comp, P4EQ, AmpSim, Cho/Fl, S.Dly]

43: GT5: Guitar Multi5
[Wah, Comp, P4EQ, Cho/Fl, S.Dly]

44: GT6: Guitar Multi6
[Comp, P4EQ, Pitch, Delay]

AS1 – AS3
Category: Guitar amp simulator

45: AS1: Amp Simulator1
[NR, AmpSim, CabRes, Cho/Fl, S.Dly]

46: AS2: Amp Simulator2
[NR, AmpSim, CabRes, Treml, Delay]

47: AS3: Amp Simulator3
[NR, AmpSim, CabRes, Phaser, Delay]

PA1

Category: Pre-amp simulator

48: PA1: Pre Amp Simulator
[Dist, NR, Tone, AmpSim]

EB1 – EB3

Category: Bass multi

49: EB1: Bass Multi1
[Comp, Exctr, P4EQ, Cho/Fl, S.Dly]

50: EB2: Bass Multi2
[Dist, NR, Filter, Delay]

51: EB3: Bass Multi3
[Comp, P4EQ, Gate]

MS1

Category: Mic multi

52: MS1: Mic Multi
[CabRes, MicSim, Comp]

VO1 – VO2

Category: Vocal multi

53: VO1: Vocal Multi1
[Comp, Exctr, Pitch, S.Dly]

54: VO2: Vocal Multi2
[NR, DeEss, P4EQ, Cho/Fl, S.Dly]

Effects within multi-effect programs GT1–VO2, and their parameters

Here are explanations of the parameters of each effect in the multi-effect chains listed above.

Dist (Distortion)

This effect distorts the input sound

Type (DriveType)	Tube, Crunch, Scream, HotBox, Higain, Valve, Crush, Scoop, Fuzz	Selects the drive type
Drive (Drive)	1...100	Sets the degree of distortion
Treble (Treble)	–15.0...+15.0	Sets the high-frequency tone
Level (Level)	0...100	Sets the output level

NR (Noise Reduction)

This effect suppresses noise.

Thrsh (Threshold)	–40.0...–1.0	Sets the level at which the effect begins to apply

Comp (Compressor/Limiter)

Ratio (Ratio)	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrshl (Threshold [dB])	–40...0dB	Sets the level above which the compressor is applied
Attck (Attack)	1...100	Sets the attack time
Relse (Release)	1...100	Sets the release time
GLevel (Gain Adjust [dB])	–Inf, –38...+24dB	Sets the compressor output gain

P4EQ (Parametric 4band EQ)

Fc1 (Band1 Cutoff [Hz])	20...1.0kHz	Sets the center frequency of Band 1
Q1 (Q)	0.5...10.0	Sets the bandwidth of Band 1
G1 (Gain [dB])	–18...+18dB	Sets the gain of Band 1
Fc2 (Band2 Cutoff [Hz])	50...5.0kHz	Sets the center frequency of Band 2
Q2 (Q)	0.5...10.0	Sets the bandwidth of Band 2
G2 (Gain [dB])	–18...+18dB	Sets the gain of Band 2
Fc3 (Band3 Cutoff [Hz])	300...10.0kHz	Sets the center frequency of Band 3
Q3 (Q)	0.5...10.0	Sets the bandwidth of Band 3
G3 (Gain [dB])	–18...+18dB	Sets the gain of Band 3
Fc4 (Band4 Cutoff [Hz])	500...20.0kHz	Sets the center frequency of Band 4
Q4 (Q)	0.5...10.0	Sets the bandwidth of Band 4
G4 (Gain [dB])	–18...+18dB	Sets the gain of Band 4
Trim	0...100	Sets the parametric EQ input level

Exctr (Exciter)

Blend (Exciter Blend)	–100...+100	Sets the intensity (depth) of the Exciter effect
Empha (Emphatic Point)	0...140	Sets the frequency range to be emphasized
EQ Trim	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15...+15dB	Sets the gain of High EQ

Wah

This produces a wah effect. It can be controlled using an expression pedal.

FcBtm (Frequency Bottom)	0...100	Sets the lower limit of the wah center frequency
FcTop (Frequency Top)	0...100	Sets the upper limit of the wah center frequency
*Mode (Sweep Mode)	Auto, Pedal	Switches between auto-wah/pedal control
LFOlvl (LFO Level)	0...100	Sets the LFO level that is added to control
*Speed (LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
Reso (Resonance)	0...100	Sets the resonance amount
LPF (LPF)	Off, On	Switches the wah low pass filter on and off

:Mode

If you wish to use an expression pedal to control the Wah, select "**Pedal**" (→p.126).

Filter

This is a filter with resonance, whose frequency can be moved by an envelope.

Type (Filter Type)	LPF, BPF, HPF	Selects the filter type
Sens (Sensitivity)	0...100	Sets the sensitivity
Attack (Attack)	1...100	Sets the attack level
Manual (Manual)	0...100	Sets the frequency to which the effect is applied
Reso (Resonance)	0...100	Sets the resonance amount
Polrty (Polarity)	+, –	Sets the polarity

AmpSim (AmpSimulator)

This effect simulates the acoustical characteristics of a guitar amp. Even if you are recording your instrument via a direct-box, you can produce a realistic sound as though a guitar amp were actually being used.

Type (Amplifier Type)	AMP1...5	Selects the type of guitar amplifier

CabRes (CabinetResonator)

This effect simulates the acoustical characteristics and cabinet resonances of a guitar amp speaker cabinet.

The "AmpSimulator" is ideal for direct recording.

Type (Cabinet Type)	1 × 8, 1 × 10, 1 × 12, 2 × 12, 4 × 10, 4 × 12	Selects the type of cabinet
Depth	0...100	Sets the depth of the effect

Tone

This effect simulates the tone control section of a guitar amp. It allows you to adjust the character of the vacuum tubes.

Bass (Bass)	0...100	Sets the low-frequency level
Middle (Middle)	0...100	Sets the middle-frequency level
Treble (Treble)	0...100	Sets the high-frequency level
Tube (Tube Type)	SS, 1...99, Tube	Sets the character of the vacuum tubes

Gate

Thrshl (Threshold)	0...127	Sets the level at which the effect begins to apply
Attack (Attack)	1...100	Sets the attack time
Relse (Release)	1...100	Sets the release time
Respo (Response)	1...100	Sets the speed at which the effect will respond to change in the input

DeEss (Deesser)

This effect attenuates unwanted sibilants in a vocal signal.

Sense (Sensitivity)	0...100	Sets the sensitivity
Fc (Side Band EQ fc)	500...20.0kHz	Sets the center frequency of the side band EQ
Q (Side Band EQ Q)	0.5...10	Sets the bandwidth of the side band EQ
Gain (Side Band EQ Gain)	–18...+18dB	Sets the gain of the side band EQ
Ratio (Ratio)	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrsh (Threshold [dB])	–40...0dB	Sets the level above which the compressor is applied
Attck (Attack)	1...100	Sets the attack time
Relse (Release)	1...100	Sets the release time
Level (Gain Adjust [dB])	–Inf, –38...+24dB	Sets the output gain

Cho/Fl (Chorus/Flanger)

This effect gives a sense of pitch movement and depth to the sound. Adjusting the delay time will change the effect significantly.

DTime (Delay Time)	0.0...50.0ms	Sets the delay time
LFO (LFO Waveform)	TRI, SIN	Selects LFO Waveform
*Speed (LFO Frequency)	0.02...20.0Hz	Sets the LFO speed
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Fdback (Feedback)	–100...+100	Sets the feedback amount
Trim (EQ Trim)	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15...+15dB	Sets the gain of High EQ
Mode (Output Mode)	Normal, Invert	Selects the output mode for the chorus/flanger
Mix (Wet/Dry)	–Wet...–1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds

:Output Mode

When this is set to "**Invert**," the phase will be inverted for the right channel of the chorus/flanger to create a simulated stereo effect, producing a more spacious feeling.

Treml (Tremolo)

LFO (LFO Waveform)	TRI, SIN, Vintage, Up, Down	Selects LFO Waveform
Shape (LFO Shape)	–100...+100	Determines how much the LFO waveform is changed
*Speed(LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

Phaser

LFO (LFO Waveform)	TRI, SIN	Selects LFO Waveform
*Speed(LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
Manual (Manual)	0...100	Sets the frequency to which the effect is applied
*Depth (Depth)	0...100	Sets the depth of LFO modulation
Reso (Resonance)	–100...+100	Sets the resonance amount
Mix (Wet/Dry)	–Wet...–1:99, Dry, 1:99...Wet	Sets the phaser effect balance

Delay

This effect generates a time-delayed copy of the input signal. This effect is mono-in/stereo-out.

DTime (Delay Time)	1...680ms	Sets the delay time
Fdback (FeedBack)	–100...+100	Sets the feedback amount
HiDamp (High Damp)	0...100	Sets the high-frequency attenuation of the feedback
LoDamp (Low Damp)	0...100	Sets the low-frequency attenuation of the feedback
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

S.Dly (Stereo Delay)

This is a variation of "Delay" that allows two channels of simultaneous input. The parameters are the same as for "Delay."

Pitch (Pitch shifter)

This effect shifts the pitch of the input signal. You can choose from three types: fast response, minimum tonal change, and a setting between these two. Since a delay with feedback is also provided, you can create special effects in which the pitch progressively steps upward (or downward).

Mode (Mode)	Slow, Medium, Fast	Switches Pitch Shifter mode
*Pitch (Pitch Shift [1/2tone])	–24...+24	Sets the pitch shift amount in steps of a semitone
Fine (Fine [cent])	–100...+100c	Sets the pitch shift amount in steps of one cent
DTime (Delay Time [msec])	0...500ms	Sets the delay time
FbSel (Feedback Position Select)	Pre, Post	Switches the feedback connection
Fdback (Feedback)	–100...+100	Sets the feedback amount
HiDamp (High Damp [%])	0...100	Sets the damping amount in the high range
Mix (Wet/Dry)	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds

: Mode

This switches the operating mode of the pitch shifter. "**Slow**" will produce the least tonal change. "**Fast**" will provide the fastest response. "**Medium**" is between these two. It is best to use "**Fast**" when only a small amount of pitch shift is needed, and "**Slow**" when you wish to shift the pitch by a large amount.

: Mode, Fine
If Cntrl is controlling Pitch and you change Modes or the Fine tuning, you must once again use Cntrl to readjust the Max and Min parameters.

: Feedback Position Select, : Feedback
When "Feedback Position Select" is set to "**Pre**," the output of the pitch shifter will be once again sent back to the pitch shifter. This means that if "Feedback" is raised, the pitch will continue stepping up (or down) each time feedback is repeated.
If "Feedback Position Select" is set to "**Post**," the feedback will not pass through the pitch shifter, so that raising "Feedback" will cause the pitch-shifted sound to be repeated without further pitch change.

MicSim (Mic Simulator)

Mic Simulator is an effect that converts sounds recorded on a conventional dynamic mic so that they appear to have been recorded on an expensive condenser mic, a special studio mic, or a vintage mic.

InMic (Input Mic Type)	Vo.Dy, Mlt.Dy	Selects the mic that was used for recording
OutMic (Output Mic Type)	Vnt.Dy, Mlt.Cn, Pc.Cn, Whale, Vo.Cn, Vo.Tb, BDr.Dy	Selects the mic to be simulated
Set (Setting)	Close, On, Off, Far	Mic setting
Trim (Trim)	0...100	Sets the adjustment level

: Input Mic Type
Vo.Dy A dynamic mic frequently used for vocals that brings the sound to the forefront and is also resistant to popping and feedback.
Mlt.Dy A dynamic mic usable for a wide range of applications including most instruments and vocals, with a crisp and well defined character.

: Output Mic Type
Vnt.Dy A simulation of a vintage mic known for its warm and rich tone, and is ideal for vocals.
Mlt.Cn A simulation of a general-purpose studio condenser mic with a wide range from low to high that is ideal for most instruments.
Pc.Cn A simulation of a small condenser mic for instruments. It has a distinctive high range, and is ideal for drum overdubs and for acoustic guitar.
Whale A simulation of a dynamic mic with clarity and a sense of power. Ideal for drum sounds.
Vo.Cn A simulation of a standard studio condenser mic that is ideal for vocals, acoustic instruments, and narrations.
Vo.Tb A simulation of a vintage tube mic that is ideal for vocals.
BDr.Dy A simulation of a fairly large dynamic mic that is ideal for bass drum sounds etc. that include the sense of air pressure characteristic of a close-mic recording.

: Set
This switches the location of the mic. "**Close**" or "**On**" settings will simulate the proximity effect that boosts the low range, so you will need to use "Trim" to adjust the overall level.

Insert (1in1outx4)

These algorithms can be selected for an **insert effect** when "**1in1outx4**" is selected as "Select Eff Type."
Different effects can be used simultaneously on four channels/tracks.

Effects **MM1–MM33** connect two mono effects in series.

Example

Algorithm number: Category number: Algorithm name
[Names of effects in the chain]

55: MM1: P4EQ – Exciter
[P4EQ Excit1]

The chain structure of each multi-effect is shown below.

For an explanation of the parameters of each effect in the chain, refer to "Effects within multi-effect programs MM1–MM33, and their parameters" beginning on the following page.

55: MM1: P4EQ – Exciter
[P4EQ, Excit1]

56: MM2: P4EQ – Wah
[P4EQ, Wah]

57: MM3: P4EQ – Cho/Flng
[P4EQ, ChFl1]

58: MM4: P4EQ – Phaser
[P4EQ, Phaser]

59: MM5: P4EQ – Mt.Delay
[P4EQ, Mt.Dly]

60: MM6: Comp – Wah
[Comp2, Wah]

61: MM7: Comp – AmpSim
[Comp2, AmpSim]

62: MM8: Comp – OD/HiG
[Comp1, ODHiG]

63: MM9: Comp – P4EQ
[Comp1, P4EQ]

64: MM10: Comp – Cho/Flng
[Comp2, ChFl1]

65: MM11: Comp – Phaser
[Comp2, Phaser]

66: MM12: Comp – Mt.Delay
[Comp2, Mt.Dly]

67: MM13: Exciter – Comp
[Excit2, Comp1]

68: MM14: Exciter – Limiter
[Excit2, Lmtr]

69: MM15: Exciter – Cho/Flng
[Excit2, ChFl1]

70: MM16: Exciter – Phaser
[Excit2, Phaser]

71: MM17: Exciter – Mt.Delay
[Excit2, Mt.Dly]

72: MM18: Limiter – P4EQ
[Lmtr, P4EQ]

73: MM19: Limiter – Cho/Flng
[Lmtr, ChFl2]

74: MM20: Limiter – Phaser
[Lmtr, Phaser]

75: MM21: Limiter – Mt.Delay
[Lmtr, Mt.Dly]

76: MM22: OD/HiG – Cho/Flng
[ODHiG, ChFl1]

77: MM23: OD/HiG – Phaser
[ODHiG, Phaser]

78: MM24: OD/HiG – Mt.Delay
[ODHiG, Mt.Dly]

79: MM25: OD/HiG – AmpSim
[ODHiG, AmpSim]

80: MM26: Wah – AmpSim
[Wah, AmpSim]

81: MM27: Decimator – AmpSim
[Decim, AmpSim]

82: MM28: Decimator – Comp
[Decim, Comp1]

83: MM29: Cho/Flng – Mt.Delay
[ChFl2, Mt.Dly]

84: MM30: Phaser – Cho/Flng
[Phaser, ChFl2]

85: MM31: AmpSim – Tremolo
[AmpSim, Trml]

86: MM32: Reverb – Gate
[Reverb, Gate]

87: MM33: MicSim – Limiter
[MicSim, Lmtr]

Effects within multi-effect programs MM1–MM33, and their parameters

Here are explanations of the parameters of each effect in the multi-effect chains listed above.

P4EQ (Parametric 4band EQ)

Fc1 (Band1 Cutoff [Hz])	20Hz...1.0kHz	Sets the center frequency of Band 1
Q1 (Q)	0.5...10.0	Sets the bandwidth of Band 1
G1 (Gain [dB])	–18...+18dB	Sets the gain of Band 1
Fc2 (Band2 Cutoff [Hz])	50Hz...5.0kHz	Sets the center frequency of Band 2
Q2 (Q)	0.5...10.0	Sets the bandwidth of Band 2
G2 (Gain [dB])	–18...+18dB	Sets the gain of Band 2
Fc3 (Band3 Cutoff [Hz])	300Hz...10.0kHz	Sets the center frequency of Band 3
Q3 (Q)	0.5...10.0	Sets the bandwidth of Band 3
G3 (Gain [dB])	–18...+18dB	Sets the gain of Band 3
Fc4 (Band4 Cutoff [Hz])	500Hz...20.0kHz	Sets the center frequency of Band 4
Q4 (Q)	0.5...10.0	Sets the bandwidth of Band 4
Gain4 (Gain [dB])	–18...+18dB	Sets the gain of Band 4
Trim (Trim)	0...100	Sets the parametric EQ input level

Excit1 (Exciter1)

Blend (Exciter Blend)	–100...+100	Sets the intensity (depth) of the Exciter effect
Empha (Emphatic Point)	0...140	Sets the frequency range to be emphasized

Excit2 (Exciter2)

This adds Pre LEQ and Pre HEQ to Exciter 1.

Blend (Exciter Blend)	–100...+100	Sets the intensity (depth) of the Exciter effect
Empha (Emphatic Point)	0...140	Sets the frequency range to be emphasized
Trim (EQ Trim)	0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB])	–15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB])	–15...+15dB	Sets the gain of High EQ

Wah (Wah/Auto Wah)

FcBtm (Frequency Bottom)	0...100	Sets the lower limit of the wah center frequency
FcTop (Frequency Top)	0...100	Sets the upper limit of the wah center frequency
*Mode (Sweep Mode)	Auto, Pedal, LFO	Selects the control from auto-wah, modulation source, and LFO
*Speed (LFO Frequency [Hz])	0.02...20.0Hz	Sets the LFO speed
Reso (Resonance)	0...100	Sets the resonance amount
LPF (LPF)	Off, On	Switches the wah low pass filter on and off

:Mode
Select "**Pedal**" if you wish to use an expression pedal to control the wah.

Comp1 (Compressor1)

Sense (Sensitivity)	1...100	Sets the sensitivity
Attack (Attack)	1...100	Sets the attack level
Level (Output Level)	0...100	Sets the output level of the compressor

Comp2 (Compressor2)

This effect adds Pre LEQ and Pre HEQ to Comp1.

Sense (Sensitivity) ... 1...100	Sets the sensitivity
Attack (Attack) ... 1...100	Sets the attack level
Trim (EQ Trim) ... 0...100	Sets the EQ input level
LEQG (Pre HEQ Gain [dB]) ... –15...+15dB	Sets the gain of High EQ
HEQG (Pre LEQ Gain [dB]) ... –15...+15dB	Sets the gain of Low EQ
Level (Output Level) ... 0...100	Sets the output level of the compressor

Lmtr (Limiter)

Ratio (Ratio) ... 1.0:1...50.0:1, Inf:1	Sets the signal compression ratio
Thrshl (Threshold [dB]) ... –40...0dB	Sets the level above which the compressor is applied
Attck (Attack) ... 1...100	Sets the attack time
Relse (Release) ... 1...100	Sets the release time
GLevel (Gain Adjust [dB]) ... –Inf, –38...+24dB	Sets the limiter output gain

AmpSim (Amp Simulator)

Type (Amplifier Type) ... SS, EL84, 6L6	Selects the type of guitar amplifier

MicSim (Mic Simulator)

Refer to 123.

Decima (Decimator)

LPF (Pre LPF) ... Off, On	Selects whether the harmonic noise caused by a decrease in sampling frequency is generated or not
Fs(Sampling Frequency [Hz]) ... 1.0k...44.1k	Sets the sampling frequency
Bit (Resolution) ... 4...24	Sets the data bit length
HiDamp (High Damp [%]) ... 0...100	Sets the ratio of cut of the high range
Level (Output Level) ... 0...100	Sets the decimator output level

ODHiG (OverDrive/HighGain)

Mode (Drive Mode) ... OD(Overdrive), HiG(Hi-Gain)	Switching between overdrive and hyper-gain mode
*Drive (Drive) ... 1...100	Sets the degree of distortion
Level (Output Level) ... 0...50	Sets the overdrive output level
LoFc (Low Cutoff [Hz]) ... 20Hz...1.0kHz	Sets the center frequency for Low EQ (shelving type)
LoG (Gain [dB]) ... –18...+18dB	Sets the gain of Low EQ
Md1Fc (Mid1 Cutoff [Hz]) ... 300Hz...10.0kHz	Sets the center frequency for Mid/High EQ 1 (peaking type)
Md1Q (Q) ... 0.5...10.0	Sets the band width of Mid/High EQ 1
Md1G (Gain [dB]) ... –18...+18dB	Sets the gain of Mid/High EQ 1
Md2Fc (Mid2 Cutoff [Hz]) ... 500Hz...20.0kHz	Sets the center frequency for Mid/High EQ 2 (peaking type)
Md2Q (Q) ... 0.5...10.0	Sets the band width of Mid/High EQ 2
Md2G (Gain [dB]) ... –18...+18dB	Sets the gain of Mid/High EQ 2

ChFl1 (Chorus/Flanger)

DTime (Delay Time [msec]) ... 0.0...50.0ms	Sets the delay time
LFO (LFO Waveform) ... TRI, SIN	Selects LFO Waveform
*Speed (Frequency [Hz]) ... 0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ... 0...100	Sets the depth of LFO modulation
Fdback (Feedback) ... –100...+100	Sets the feedback amount
Mix (Wet/Dry) ... –Wet...–1:99, Dry, 1:99...Wet	Sets the effect balance of the chorus/flanger

ChFl2 (Chorus/Flanger2)

DTime (Delay Time [msec]) ... 0.0...50.0ms	Sets the delay time
LFO (LFO Waveform) ... TRI, SIN	Selects LFO Waveform
*Speed (Frequency [Hz]) ... 0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ... 0...100	Sets the depth of LFO modulation
Fdback (Feedback) ... –100...+100	Sets the feedback amount
EQTrim (EQ Trim) ... 0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB]) ... –15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB]) ... –15...+15dB	Sets the gain of High EQ
Mix (Wet/Dry) ... –Wet...–1:99, Dry, 1:99...Wet	Sets the effect balance of the chorus/flanger

Phaser

LFO (LFO Waveform) ... TRI, SIN	Selects LFO Waveform
*Speed (LFO Frequency [Hz]) ... 0.02...20.0Hz	Sets the LFO speed
Manual (Manual) ... 0...100	Sets the frequency to which the effect is applied
*Depth (Depth) ... 0...100	Sets the depth of LFO modulation
Reso (Resonance) ... –100...+100	Sets the resonance amount
Mix (Wet/Dry) ... –Wet...–1:99, Dry, 1:99...Wet	Sets the phaser effect balance

Trml (Tremolo)

LFO (LFO Waveform) ... TRI, SIN, Vintage, Up, Down	Selects LFO Waveform
Shape (LFO Shape) ... –100...+100	Determines how much the LFO waveform is changed
*Speed (LFO Frequency [Hz]) ... 0.02...20.0Hz	Sets the LFO speed
*Depth (Depth) ... 0...100	Sets the depth of LFO modulation

Mt.Dly (Multitap Delay)

T1Time (Tap1 Time [msec]) ... 0...680ms	Sets the Tap1 delay time
T2Time (Tap2 Time [msec]) ... 0...680ms	Sets the Tap2 delay time
T1Lvl (Tap1 Level) ... 0...100	Sets the Tap1 output level
Fdback (Feedback) ... –100...+100	Sets the Tap2 feedback amount
HiDamp (High Damp [%]) ... 0...100	Sets the damping amount in the high range
Mix (Wet/Dry) ... Dry, 1:99...99:1, Wet	Sets the effect balance of the multi-tap delay

Reverb (Mono Reverb)

Time (Reverb Time [sec]) ... 0.1...10.0sec	Sets the reverberation time
HiDamp (High Damp [%]) ... 0...100%	Sets the damping amount in the high range
PreDly (Pre Delay [msec]) ... 0...200msec	Sets the delay time of the reverb sound and gate control signal
EQTrim (EQ Trim) ... 0...100	Sets the EQ input level
LEQG (Pre LEQ Gain [dB]) ... –15...+15dB	Sets the gain of Low EQ
HEQG (Pre HEQ Gain [dB]) ... –15...+15dB	Sets the gain of High EQ
RevBal (Reverb Balance) ... Dry, 1:99...99:1, Wet	Sets the effect balance of the reverb

Gate

Contrl (Input Reverb Mix) ... Dry, 1:99...99:1, Wet	Sets the balance between the dry and reverb sounds of the gate control signal
Polrty (Polarity) ... +, –	Switches between non-reversed and reversed Gate on/off
Thrshl (Threshold) ... 0...100	Sets the level to which the Gate is applied
Attack (Attack) ... 1...100	Sets the attack time
Relse (Release) ... 1...100	Sets the release time

The Gate of 86:MM32: Reverb-Gate is connected to the Wet output of the reverb.
This means that the on/off switch of the Gate effect is linked to the Reverb, and will be switched on/off in conjunction with the Reverb.

Insert (1in1outx8)

These algorithms can be selected as an **insert effect** if "**1in1outx8**" is selected for "SelectEffType."
Different insert effects can be used on each of eight channels/tracks.

Effects **MN1–MN11** are monaural type effects.

"**1in1outx8**" effects cannot be controlled by an expression pedal etc.

88: MN1: OverDrive/HighGain

The parameters are the same as for ODHIG.

89: MN2: Compressor2

The parameters are the same as for Comp2.

90: MN3: Limiter

The parameters are the same as for Limitr.

91: MN4: Gate

Polrty ([G] Polarity)	+, –	Switches between non-reversed and reversed Gate on/off
Thrshl (Threshold)	0...100	Sets the level to which the Gate is applied
Attack ([G] Attack)	1...100	Sets the attack time
Relse (Release)	1...100	Sets the release time

92: MN5: Exciter2

The parameters are the same as for Excit2.

93: MN6: Parametric 4band EQ

Fc1 (Band1 Cutoff [Hz])	20Hz...1.0kHz	Sets the center frequency of Band 1
Q1 (Q)	0.5...10.0	Sets the bandwidth of Band 1
G1 (Gain [dB])	–18...+18dB	Sets the gain of Band 1
Fc2 (Band2 Cutoff [Hz])	300Hz...10.0kHz	Sets the center frequency of Band 2
Q2 (Q)	0.5...10.0	Sets the bandwidth of Band 2
G2 (Gain [dB])	–18...+18dB	Sets the gain of Band 2
Fc3 (Band3 Cutoff [Hz])	300Hz...10.0kHz	Sets the center frequency of Band 3
Q3 (Q)	0.5...10.0	Sets the bandwidth of Band 3
G3 (Gain [dB])	–18...+18dB	Sets the gain of Band 3
Fc4 (Band4 Cutoff [Hz])	500Hz...20.0kHz	Sets the center frequency of Band 4
Q4 (Q)	0.5...10.0	Sets the bandwidth of Band 4
G4 (Gain [dB])	–18...+18dB	Sets the gain of Band 4
Trim (Trim)	0...100	Sets the parametric EQ input level

94: MN7: Amp Simulator

Type (Amplifier Type)	AMP1...5	Selects the type of guitar amplifier
Thrshl (Threshold)	0...127	Sets the level at which the effect begins to apply
Attack (Attack)	1...100	Specifies the length of the attack
Relse (Release)	1...100	Specifies the length of the release
Ratio (Ratio)	1.0:1...inf:1	Specifies the compression ratio
Respo (Response)	1...100	Specifies the speed at which change will occur in response to the input

95: MN8: Multitap Delay

The parameters are the same as for Mt.Dly.

96: MN9: Chorus/Flanger2

The parameters are the same as for ChFl2.

97: MN10: Phaser

The parameters are the same as for Phaser.

98: MN11: Expander

This effect makes the sound tighter and improves the dynamic range and S/N ratio by compressing signals that are below a specified level.

Effect Control

Cntrl (Control)

Select the parameter that will be controlled by an expression pedal or an external MIDI controller, and specify the range of parameter values for control.

Param (Parameter)	***	Name of parameter to be controlled
Max	***	Maximum value of parameter to be controlled
Min	***	Minimum value of parameter to be controlled

: Param

Select the parameter to be controlled. The parameters that can be selected will differ depending on the program.
For example, the "**Cho/Fl-Depth**" selection for "Param" will control the "**Depth**" parameter of the Cho/Fl. When this is "**Off**," control will not occur.

: Max, : Min

Specify the upper and lower limits of the range in which the parameter value will be controlled. By exchanging the "Max" and "Min" values, you can (for example) reverse the effect that occurs when a pedal is advanced and released.
The available values will depend on the effect. "Max" and "Min" will not be displayed when "Param" is set to "**Off**" or "**Wah**."

Using a pedal to control wah

① As explained in "Controlling an effect from an external device" (→p.47), make settings for "Device" etc. and select an effect program that provides a wah.
② Press the "(EffectIcon)" button for "**Cntrl**," and set "Param" to "**Wah**."
③ Press the "(EffectIcon)" button for "**Wah**," and set "Mode" to "**Pedal**."

Appendices

Troubleshooting

No sound

☐ Is the power of the D1600 or connected equipment turned off? (→p.17)

Can't hear the playback

☐ Have the [MASTER] fader or [PHONES] knob been lowered?

☐ Have the channel volume levels been lowered?
When pairing has been switched off after it had been on, or after using Scene Read, the actual volume levels may not match the positions of the faders.
→ Raise and lower the faders so that the actual volume level matches the fader position, and then adjust the level as desired.

☐ Has the [TRACK STATUS] been set to **MUTE**? (→p.111)

☐ Has Solo been turned on to mute the track audio? (→p.109)

☐ If you are using audio punch-in/out and cannot hear the playback of the recorded track ([TRACK STATUS] **REC**) outside of the in-out region, has the [SOLO/MONITOR] "Monitor" tab page setting "AutoIn" been turned "**On**"? (→p.110)

☐ When cue is selected, the cue level of each channel may have been lowered.
→ In the [SOLO/MONITOR] "Monitor" tab page, raise the cue level. (→p.110)

Can't hear the input

☐ After being connected to an input jack, has the input been sent to a mixer channel?
→ In the [INPUT] "Ch1–8" or "Ch9–16" tab page, send the signal to a mixer channel. (→p.23)

☐ Check that an audio signal is being input.
→ In the [METER/TRACK VIEW] page, set "SelectDisplay" to "**PostFdr**," and watch the meter to verify that audio is being input to each mixer channel.
Raise the [CHANNEL] faders and [MASTER] fader to appropriate positions. If the meter does not move, there is no input to the channel.

☐ Are the monitor settings appropriate?
→ In the [SOLO/MONITOR] "Monitor" tab page, select the signal that you wish to monitor. (Normally, set "**MasterLR**" to "**On**.") If "**Rhythm**" or "**Cue**" are turned "**On**," raise their volume levels. (→p.110)

☐ Is the [TRACK STATUS] set to **REC** or **INPUT**? (→p.111)

☐ Has the [TRIM] knob been raised to an appropriate level?

☐ If the input sound is no longer heard when you playback a track whose [TRACK STATUS] is set to **REC**, has the [SOLO/MONITOR] "Monitor" tab page setting "AutoIn" been turned "**Off**"? (→p.110)

☐ When cue is selected, has the cue level of each channel been turned down?
→ In the [SOLO/MONITOR] "Monitor" tab page, press the "Level" button and raise the level. (→p.110)

☐ In some cases, the sound of the digital input may not be input for two or three seconds. If the sampling frequency changes on the digital input device that is connected (for example from 48 kHz to 44.1 kHz), the sampling rate converter inside the D1600 will require two or three seconds to register the frequency change. Please wait until the sound can be heard once again.

☐ Is the format of the digital input inappropriate?
→ Connect an instrument or digital audio device that conforms to CP-1201 or S/P DIF.

No sound from an audio CD inserted in the internal CD-R/RW drive

☐ Is the output from the internal CD-R/RW drive correctly assigned to a mixer channel?
→ Assign the output to a mixer channel in the [INPUT] "Ch1–8" or "Ch9–16" tab page, and set the [TRACK STATUS] to INPUT (orange).

☐ Has the internal CD-R/RW drive been installed correctly?
→ Refer to the installation directions once again, and make sure that the drive is installed correctly. (→p.134)

Only the sound of an audio CD can be heard

☐ Is "CD Monitor" turned "On" so that the monitor sound is not output?
→ If "CD Monitor" is "On," all sound other than the sound from the internal CD drive will be muted. Turn this "Off" unless you are using the internal CD drive to monitor an audio CD. (→p.91)

No sound from [AUX OUT]

"External effect does not apply ([AUX OUT])" (→p.129)

Can't hear the rhythm

(→p.129)

Can't hear the scrub playback

☐ Is the counter display set to measures (MBT)?
→ If the counter display unit is set to Measure (MBT) for a song that uses the tempo track, rotating the [VALUE] knob may not cause the data to be played immediately.
→ When using the Scrub function, please set the counter display unit to Time display (MSM) or Frame display (MSF). (→p.75)

Channel fader or EQ does not work

Faders do not work

☐ When pairing is on, the faders of even-numbered channels 1–16 will not function.
The volume level of an even-numbered channel is controlled by the fader of the adjacent odd-numbered channel to the left.

☐ When you turn pairing off after it had been on, or after Scene Read is used, the volume levels of the channels may not match the fader positions.
→ Raise and lower the faders so that the fader positions match the actual volume levels.

EQ does not work

☐ For an input signal, the input EQ can be used and the channel EQ cannot be used.
→ Adjust the input EQ in the [INPUT] "InEq1–4" or "InEq5–8" tab page.

☐ For a playback signal, the channel EQ can be used and the input EQ cannot be used.
→ Adjust the channel EQ in the [EQ/PHASE] "Eq1–4," "Eq5–8," "Eq9–12," or "Eq13–16" tab page.

☐ The input EQ cannot be used on the digital input or on the rhythm. The input EQ can be used only on the analog inputs.

Can't record

☐ Is the [CHANNEL] fader of the D1600 lowered? (When the [RECORD] "RecMode" tab page item "Select RecMode" is set to "**Input**")

☐ Is the [MASTER] fader of the D1600 lowered? (When the [RECORD] "RecMode" tab page item "Select RecMode" is set to "**Bounce**")

☐ Is the [TRACK STATUS] of the recording destination track not set to **REC**?

☐ Is disk capacity insufficient?
→ Set the counter display to "FreeTime" and check the remaining time available for recording. (→p.35, 75)
→ Delete backed up songs or unneeded songs to increase the free space on the disk. (→p.60, 65)

☐ Is the input source that you wish to record being correctly input to a mixer channel?
→ In the [INPUT] "Ch1–8" or "Ch9–16" tab page, assign the input to a mixer channel. (→p.23)

☐ Is the recording mode ("Select RecMode") appropriate? (→p.27, 80)

☐ Is "RHSL" turned off? (→p.112)

Can't input digitally

☐ If you wish to input a digital signal, press the "DigiIn" button to turn it "**On**" in the [INPUT] "Ch1–8" or "Ch9–16" tab page. (→p.25)

Too much noise or distortion in the input sound or recorded sound

☐ Is the [TRIM] setting appropriate? If the [TRIM] is too high, the sound will be distorted. If it is too low, there will be excessive noise.
→ To adjust [TRIM] to the optimal settings for the [INPUT 1]–[INPUT 8/GUITAR IN] jacks, use the [METER/TRACK VIEW] page "Select Display" to choose "**PreFdr**," and adjust [TRIM] so that the level is as high as possible without allowing the level meter "CLP" to light.

☐ If the input or output of an effect is distorted, make the following adjustments.

→ **Input**
- Insert effect: While watching the meter in the [INSERT EFFECT] "InsEff1"–"InsEff5–8" tab page, use [TRIM] etc. to adjust the input volume so that "CLIP" does not light.
- Master effect: While watching the meter in the [MASTER EFFECT/AUX] "EffSnd 1" or "EffSnd2" tab page, adjust the send volumes so that "CLIP" does not light.
- Final effect: While watching the meter in the [MASTER EFFECT/AUX] "FinalEff" tab page, adjust the volume of each channel so that "CLIP" does not light.

→ **Output**
- Insert effect: Adjust the effect parameters or [TRIM] while listening to the result.
- Master/final effect: While watching the meter in the [MASTER EFFECT/AUX] "EffSnd1," "EffSnd2," or "FinalEff" tab page, adjust the effect parameters so that "CLP" does not light.

☐ If distortion is occurring in the EQ, make the following adjustments.
→ For the analog input, adjust the input EQ. For playback, adjust the gain of the channel EQ. (→p.37)

Effects do not apply

☐ Have you selected effect program number 000?
→ Select an "EffectNumber" other than "**000**" (=NO EFFECT).

Insert effect does not apply

☐ Is the digital input enabled?
→ If "DigiIn" is turned "**On**" in the [INPUT] "Ch1–8" or "Ch9–16" tab page, the insert effects are disabled. Turn the setting "**Off**."

☐ Is the effect inserted at an appropriate location?
→ In the [INSERT EFFECT] "InsAss" tab page, set "Assign" to "In" if applying the insert effect to the input, or to "Trk" if applying the insert effect to the playback. (→p.105)

Can't control the insert effect by expression pedal or MIDI

☐ Has a valid effect been selected for "Ass(#)" in the [SYSTEM] "Control" tab page?
→ In the [INSERT EFFECT] "InsAss" tab page, make sure that a valid effect has been selected in "SelectEffType." Example: Situations such as when "**InsEff3**" is selected for "Ass" and "**1in2out×2**" is selected for "SelectEffType" (only InsEff1 or InsEff2 can be used).

☐ Is the correct device being used to control the effect?
→ Control the effect using the device that is selected by the [SYSTEM] "Control" tab page "Device" parameter. (→p.75)

☐ For the selected effect, have you chosen effect program number "**000**" (=NO EFFECT) or an effect program that does not include a control function?

☐ When controlling via MIDI, does the MIDI channel of the D1600 match the MIDI channel of the transmitting MIDI device? (→p.76)

Can't select an "1in2outx2" insert effect

☐ Insert effect assign may have been set to "Trk."
→ "1in2out x2" insert effects can be selected if the [INSERT EFFECT] "InsAss" tab page "Assign" parameter is set to "In." Set this parameter to "In."

Master effect does not apply

☐ Is the send from each channel set to 0 or near 0?
→ In the [MASTER EFFECT/AUX] "EffSnd1" or "EffSnd2" tab page, raise the "Send" amount.

☐ Is the return set to 0 or near 0?
→ In the [MASTER EFFECT/AUX] "MstEff1" or "MstEff2" tab page, raise "RetLevel" to increase the return level.

☐ If you are monitoring the sound from the [MONITOR OUT L/R] jacks, has the master LR bus output been turned off?
→ In the [SOLO/MONITOR] "Monitor" tab page, press the "MasterLR" button to turn it "**On**"

Final effect does not apply

☐ If you are monitoring the sound from the [MONITOR OUT L/R] jacks, has the master LR bus output been turned off?
→ In the [SOLO/MONITOR] "Monitor" tab page, press the "MasterLR" button to turn it "**On**."

External effect does not apply ([AUX OUT])

☐ Is the external effect send set to 0 or near 0?
→ In the [MASTER EFFECT/AUX] "AuxSend" tab page, use "Aux" to raise the external send level.

☐ Is the output of the external effect connected to the [INPUT 1]–[INPUT 8] jacks and assigned to a mixer channel?
→ Use [INPUT] "Ch1–8" or "Ch9–16" tab page to assign the input.

☐ Are the sub input settings correct? (→p.50, 102)

Rhythm

No rhythm sound

☐ In the [TEMPO/RHYTHM] "Setup" tab page, is "Rhythm" turned "**Off**"? (Is the [TEMPO/RHYTHM] key dark?)
→ Turn "Rhythm" "**On**."

☐ Is the recorder stopped?
→ Press the [PLAY] key to play back. The rhythm will sound when the recorder is recording or playing. If you wish to check the rhythm sound while the recorder is stopped, select the [TEMPO/RHYTHM] "SetUp" tab page.

☐ Did you select a silent rhythm pattern?

☐ Has the rhythm volume been lowered?
→ In the [TEMPO/RHYTHM] "SetUp" tab page, use "RhythmVol" to adjust the volume. When using the tempo map, use the "TmpMap" tab page "Edit" button to adjust the volume of each map.

Rhythm sound does not stop, or sounds doubled (volume is excessive)

☐ In the [TEMPO/RHYTHM] "SetUp" tab page, has "Rhythm" been turned "**On**" ([TEMPO/RHYTHM] key lit)?
→ Either switch "Rhythm" from "**On**" to "**Off**," or use "Vol" to lower the volume.

☐ Is the rhythm selected for monitoring?
→ In the [SOLO/MONITOR] "Monitor" tab page, turn "Rhythm" "**Off**."

☐ Is the rhythm assigned as an input?
→ In the [INPUT] "Ch1–8" or "Ch9–16" tab page, do not assign "Rhythm L" or "Rhythm R" to a channel. Alternatively, lower the fader of the channel that the rhythm is assigned to.

Pressing a key does not perform the function

☐ Some keys do not function when the recorder is playing or recording.
→ Stop the recorder, and then perform the operation.

☐ Some keys do not function while scrub is turned on.
→ Turn off Scrub, and then perform the operation. (→p.101)

MIDI

MIDI sequencer does not synchronize/MIDI control is not possible

☐ Is the MIDI cable connected correctly? (→p.11, 73)

☐ Is the MIDI cable broken?

Can't synchronize using MTC or MIDI Clock

☐ Has the D1600 been set as the master and the MIDI sequencer as the slave? (→p.73)

☐ Does the synchronization signal transmitted by the D1600 match the synchronization signal received by the MIDI sequencer?
→ Check "Select MIDISync Mode." (→p.73, 76)

☐ If "TempoSource" is set to "**TempoTrack**," has MIDI clock or tap tempo been recorded on the tempo track? (→p.67)

☐ Are the synchronization settings of your MIDI sequencer correct?
→ Refer to the owner's manual of your MIDI sequencer.

The D1600 does not receive MMC

☐ In the [SYSTEM] "MIDI" tab page, is "RcvMMC" turned "On"?

☐ In the above-listed page, does the "MMCDevID" setting match the MMC device ID of your MIDI sequencer? (→p.73, 77)

note The settings required on your MIDI sequencer will depend on the one you are using.

☐ Has your MIDI sequencer been set to transmit MMC?
→ Refer to the owner's manual of your MIDI sequencer.

Can't control effects/scenes via MIDI

☐ Do the MIDI channels of the D1600 and your MIDI sequencer match?

→ In the [SYSTEM] "MIDI" tab page, check "GlobalCh." (→p.73)

The D1600 does not synchronize as a slave

→ If the D1600 is set as a MTC slave, several seconds may be required before synchronization is achieved.

Can't control other devices via MMC

☐ In the [SYSTEM] "MMC" tab page, is "Select MMC Mode" set to "**Transmit**"?

☐ Is the device receiving MMC set correctly to receive MMC?

The D1600 does not transmit mixer parameters

☐ In the [SYSTEM] "MIDI" tab page, is the "Control-Change" parameter "Trans" turned on?

☐ Is the device receiving control changes set to record MIDI channels 1–16?

The D1600 does not receive mixer parameters

☐ In the [SYSTEM] "MIDI" tab page, is the "Control-Change" parameter "Recv" turned on?

External disk drive

The external disk drive is not recognized in the [SYSTEM] "DiskUtil" tab page

☐ Is the external disk connected correctly? (→p.67)

☐ Is the last external disk terminated correctly? (→p.67)

☐ Are two or more disk drives set to the same SCSI device ID?

→ For details on setting the SCSI device ID, refer to the owner's manual of your drive.

Disk drive is not recognized when selecting songs

☐ Has the disk been initialized?

→ Before recording or copying a song to an external disk drive (on a HDD or removable disk), the disk must be initialized. Initialization is not necessary in order to backup (on a removable disk). If the disk is recognized in the [SYSTEM] "DiskUtil" tab page, it can be used.

Can't remove the external removable disk

☐ Is a song on the external removable disk currently selected?

→ If the currently selected song is on the removable disk, removing the disk may damage the song data; for this reason, the D1600 locks the disk drive. Refer to "Exchanging removable disks" (→p.68), and remove the disk.

After a drive was left for an extended period (ten minutes or more) after playback or locate, playback is incorrect

☐ Has the drive entered sleep mode?

→ Some drives may enter sleep mode if they have not been accessed for an extended period of time. Press the [STOP] key to cancel sleep mode.

Display indicates "Unknown Disk" even when DOS format disk is connected

→ Refer to "Note when using DOS format disks" (→p.72).

CD-R/RW

The external CD-R/RW drive is not recognized

☐ Has the SCSI ID been set to other than 6? (→p.67)

☐ Did you turn on the power of the CD-R/RW drive before turning on the power of the D1600?

→ Temporarily turn off the power of the external CD-R/RW drive and the D1600, and then turn on the power in the order of the external CD-R/RW drive and then the D1600.

The internal CD-R/RW drive option is not recognized

☐ Has ID6 been specified for an external SCSI drive?

→ If an external drive with SCSI ID6 is connected, the external drive will take priority. If you are using an internal CD-R/RW drive, set the SCSI ID of the external SCSI drive to a setting other than 6.

☐ Has the CD-R/RW drive been installed correctly?

→ Turn off the power of the D1600, and check the connections. (→p.67)

Can't write

☐ Further writing is not possible on a CD-R/RW disc that has been finalized. (→p.49)

☐ It is not possible to write to a CD-RW disc that contains data created on another device.

☐ CD writing has failed

→ Lower the speed at which data is written to the CD-R/RW.

→ Use the recommended media for your drive.

→ Replace the media.

☐ If you are writing from an external SCSI device to the CD, the transmission speed may be insufficient.

→ You may be able to write successfully if you copy the data from the external SCSI device to the internal hard disk, and then write it from the internal hard disk to the CD.

☐ In some cases, the writing speed will be too fast if you attempt to write at 4X speed.

→ Try writing at 2X speed.

Can't playback the disc on an audio CD player

☐ Did you execute the Finalize operation?

→ In the [SONG] "CDR/RW" tab page, press the "Final" button to execute the Finalize operation. (→p.92)

☐ Are you using CD-R media?

→ We recommend that you use CD-R media, since CD players may not be able to play CD-RW media.

☐ Have you tried using a different type of media?

→ Even when the recommended type of CD-R/RW media is used, some CD players may be unable to play back the disc. Sometimes playback will be successful if a different type of CD-R/RW media is used.

Can't backup to CD-R/RW

☐ Are you using blank media?

→ In the case of a CD-R, you must use new (unused) media. In the case of CD-RW, use the [SONG] "CDR/RW" tab page "Erase" button to erase the contents of the media before you execute the backup.

WAV

WAV files stored on a DOS format external SCSI disk do not appear in the WAV file list

☐ Are they saved in a sub-directory?
→ Sub-directories are not supported for media other than CD-ROM, CD-R, or CD-RW. Re-save the WAV files in the root directory.

Can't preview

☐ Is the WAV file in a supported format?
→ Preview WAV files of a supported format. (→p.68, 86)

☐ Is the file name appropriate?
→ The D1600 supports file names that are compatible with **ISO 9660 Level 1**.

Messages

Confirmation messages

Completed

☐ The operation has been completed successfully. Select the "OK" button and press the [ENTER] key.

SongFull

☐ The maximum number of songs that can be stored on a disk drive has been exceeded.
→ Either delete unneeded songs, or select another drive.

*****ing (*** is Copy or Write, etc.)**

☐ An operation is in progress. Please wait until this display disappears.

Obey Copyright Rules

☐ When using digital input or when creating an audio CD, please carefully read the section "COPYRIGHT WARNING" (→p.1), and observe the copyright law.

Error messages

Can't Play CD

☐ Could not play an audio CD.
→ If the CD has not been finalized, finalize the CD before playing it.
→ If the CD has been finalized, check the connections of the drive. If there are no problems with the connections or operation, try another disc.

Disc Full

☐ When writing an audio CD, there was insufficient space on the CD.
→ Write to new CD media.

Disk

☐ Failure while reading from the disk drive.
→ In [SYSTEM] "DiskUtil" tab page, execute "**CheckDrive**." If this message still appears, please delete that song. If this message still appears even after you have deleted the song, please re-format the disk drive.

If you "Format" the internal 20 GB drive, approximately 240 minutes will be required for the operation to be completed. If you execute "CheckDrive," approximately 30 minutes will be required if "Full" is off, or approximately 240 minutes if "Full" is on.

DiskBusy

☐ If this message appears when you have just begun to use a disk drive, the disk drive is too slow to perform recording/playback.
→ Please use this disk for backup.

☐ Disk drive reading speed may be slowed down if punch-in/out recording or track editing has caused the data to be fragmented across the disk.
→ In [TRACK] "EditTrack" tab page, execute "**OptimizeTrack**." If an error message appears even after you execute "**OptimizeTrack**," please execute "CheckDrive."

DiskRepaired1
DiskRepaired2
DiskRepaired3

☐ An error occurred in "CheckDrive"

→ **DiskRepaired1** indicated that an error was found but was repaired. If this message appears, you can continue using the disk.
DiskRepaired2 and **3** indicate that the error could not be repaired completely. If this message appears, it is possible that the song data has been damaged or lost. In this case, the song or other data will be erased, but by initializing the disk you can continue using it as before.

DriveConditionError

☐ If this message appears when an unfinalized CD is played, it is possible that your drive does not support unfinalized CD's.

→ Finalize the disc before playing it.

☐ If this message appears when using a CD-R/RW drive, an error has occurred in the drive.

→ Check the drive connections. If no problem is found with connections or operation, replace the media.

DriveFull

☐ The drive capacity is insufficient.

→ Try turning the power off and then on again. (When recording or editing track data, the current data will be saved to disk.)
If this message still appears, delete unwanted songs or select another drive.

DriveProtected

☐ The selected removable disk (e.g., magneto-optical disk) is write protected.

→ Remove the disk, and turn off write protection.

IllegalDrive/Operation

☐ The operation you attempted was not appropriate for the selected drive. For example, this message will appear if you attempted to eject a non-removable disk, or if you attempted to load the system from a drive that did not contain the system.

→ Select an appropriate drive or operation.

IllegalTo-EndTime

☐ When using the expand/compress track editing operation ("Exp/CompTrack"), the **TO** and **END** settings could not be executed for the **IN–OUT** region.

→ Set the TO–END region so that it is **50–200%** of the IN–OUT region.

InTime>=OutTime

☐ When using track editing, auto punch-in/out recording, or looping, the **IN** and **OUT** settings you made were incorrect so that the operation could not be executed. This message will appear if IN is later than OUT, or if they are at the same time location.

→ Change the **IN** and **OUT** times to the correct settings.

ToTime>=EndTime

☐ When using the expand/compress track editing operation ("Exp/CompTrack"), the **TO** and **END** settings you made were incorrect so that the operation could not be executed. This message will appear if TO is later than END, or if they are at the same time location.

→ Set the times correctly.

MemoryFull

☐ There is insufficient memory for recording or track editing.

→ Delete unneeded data.
In some cases, you can solve this problem by turning the power off and then on again.

MIDIOverflow

☐ When receiving MMC or recording MIDI Clock, a MIDI data reception failure occurred.

→ Delete unneeded data from the transmitting device.

No CDRW Disc

☐ The erase destination media is not a CD-RW.

→ Execute the erase command on a CD-RW.

No Event

☐ When writing an audio CD, tracks 1/2 did not contain audio data.

→ Bounce the data to be written to CD into tracks 1/2.

No internal hard disk drive

☐ The internal hard disk was not detected.

→ Please install an internal hard disk. If it is already installed, please re-check that it is installed correctly.

→ If an internal CD-R/RW drive is installed, check that it is installed correctly.

NumberOfTracks

☐ During track editing, the number of source tracks is different than the number of destination tracks.

→ Make settings so that the source and destination have the same number of tracks.

☐ Since "**Clip**" contains no data, data cannot be copied.

→ Either copy data to "**Clip**," or select a different copy source track.

☐ When exporting WAV data, there were more than two tracks in the clip-board.

→ Execute the WAV file export command after copying **two tracks or fewer**.

SameFileNameExists!

☐ When exporting a WAV file, a WAV file of the same name already exists in the export destination drive.

→ Specify a different filename.

SongProtected

☐ The selected song is protected.

→ Either turn off protect (→p.89), or select a different song.

☐ A song created on the D12 etc. cannot be directly recorded or edited.

→ First copy the song to the D1600, and then record or edit it.

TempoFast

☐ When recording tempo, the tempo was too fast to be recorded correctly.

→ If you are recording MIDI clock, set the tempo of the MIDI transmitting device (sequencer etc.) to a slightly slower setting.

→ If you are recording tap tempo, please tap at a slightly slower tempo.

TempoSlow

☐ When recording tempo, the tempo was too slow to be recorded correctly.

→ If you are recording MIDI clock, set the tempo of the MIDI transmitting device (sequencer etc.) to a setting of ♩=40 or faster.

→ If you are recording tap tempo, please tap at a slightly faster tempo.

Track Full

☐ When writing an audio CD, the number of tracks (the number of songs) written to the CD has exceeded **99 songs**.

→ Write to new CD media.

Unsupported File Type

☐ When importing a WAV file, you attempted to import a file that was not 8 bit/16 bit/24 bit, 44.1 kHz monaural/stereo.

→ Select a 8 bit/16 bit/24 bit, 44.1 kHz monaural/stereo file.

Write CD Failed

☐ Writing to CD has failed.

→ Select a slower speed for writing to the CD-R/RW.

→ Use the media recommended for your drive.

☐ If you are attempting to write to CD from an external SCSI device, the transmission speed may be insufficient.

→ You may be able to write successfully if you copy the data from the external SCSI device to the internal hard disk, and then write it from the internal hard disk to the CD.

→ Read the "CD-RW" section of "Troubleshooting."

Installing a hard disk or CD-R/RW drive

The D1600 has a hard disk bay and a CD-R/RW drive bay, into which you can respectively install a hard disk and CD-R/RW drive recommended by Korg.

note Make IDE settings to set the hard disk as the master, and the CD-R/RW drive as the slave. For details on making these settings, refer to the manual for the device you are installing.

Cautions when installing a hard disk or CD-R/RW

- Hard disks and CD-R/RW drives are precision devices. Handle them with care, and do not subject them to vibration or shock.
- You will need a screwdriver to install the drive. Please obtain a screwdriver that fits the head of the screws. Using an unsuitable screwdriver may damage the head of the screws.
- When installing a drive, remove only the screws that you are directed to remove. Be careful not to lose the screws you remove.
- Be careful to avoid personal injury when installing a drive.
- Do not touch the circuit boards or connector contacts.

Before moving the D1600, you must remove the hard disk and/or CD-R/RW drive.

1. About the internal hard disk

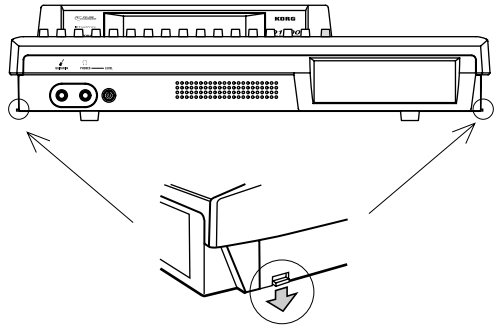
The D1600 cannot be used unless an internal hard disk is installed. Before you use the D1600, you must install a hard disk sold or recommended by Korg.
For information on hard disks that Korg recommends, please contact your Korg distributor.

Never use a hard disk that is not sold by Korg or recommended by Korg.

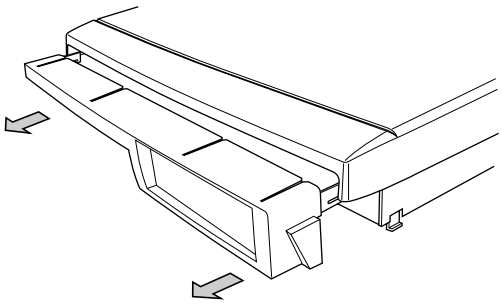
Installing the internal hard disk

① **Turn off the power of the D1600, and disconnect all connected cables.**

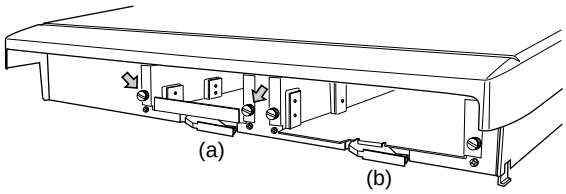
② **Remove the front cover.**
Unlock the cover by sliding the lock levers located at the left and right.



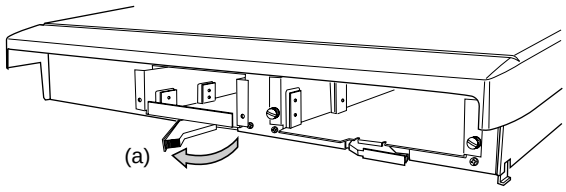
③ **Pull the front cover away from the unit toward yourself.**

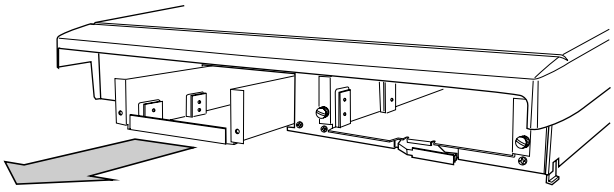


④ **Remove the two screws that fasten the hard disk cartridge.**
Be careful not to lose these screws, since they will be used to fasten the hard disk cartridge in place.

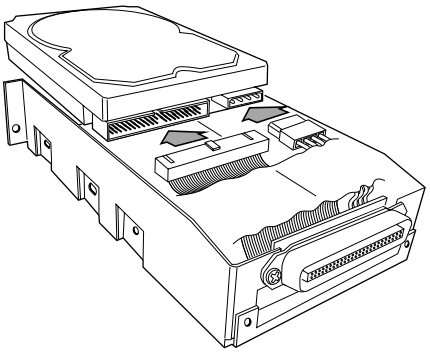


⑤ **Pull out the hard disk cartridge.**
Pull the lever located below the hard disk cartridge in the direction of the arrow, and pull out the hard disk cartridge.

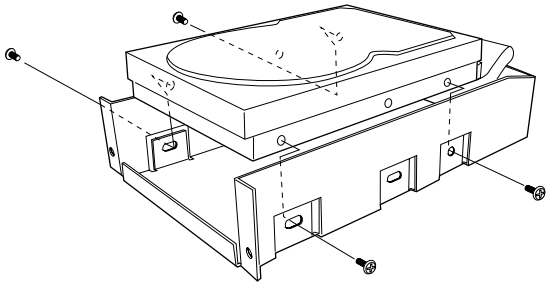




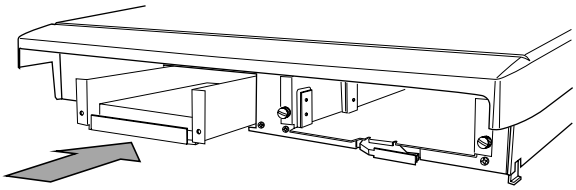
⑥ **Connect the cable to the hard disk.**
Connect the 40 pin flat cable and power supply cable (attached to the hard disk cartridge) to the hard disk. Be careful that the connectors are oriented correctly, and that they are pushed in all the way.



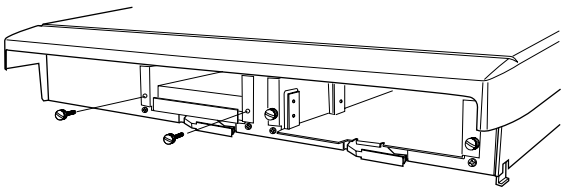
⑦ **Fasten the hard disk in the hard disk cartridge.**
Use the screws included with the hard disk to fasten the hard disk in place.



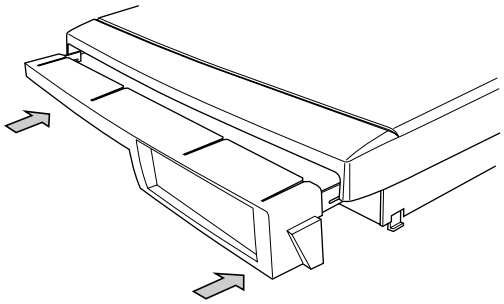
⑧ **Insert the hard disk cartridge into the D1600.**
Push it firmly in all the way.



⑨ **Using the screws that you removed in step ④, fasten the hard disk cartridge to the D1600.**



⑩ **Close the front cover.**
Attach the front cover that you removed in step ②. Raise the lock levers located at the left and right of the D1600 to lock the front cover in place.



Checking the operation of the hard disk

① **Use the procedure described in "Turning the power on" to turn on the power, and verify that the D1600 starts up correctly.**

If the D1600 fails to start up correctly, re-check the installation.

② **If a message of "INIT Internal Hard Disk Drive" appears when you turn on the power, press the "OK" button to initialize the hard disk.**

When you execute the Initialize operation, all data that had been recorded on that hard disk will be erased.

③ **Once initialization is completed, you are ready to use the D1600.**

If errors such as "Disk" or "DiskBusy" appear frequently during operation, execute the Format operation. (→p.79)

2. About the internal CD-R/RW drive

If a **CDRW-2** CD-R/RW drive (sold separately) or a CD-R/RW drive recommended by Korg is installed, you will be able to do the following things.

- Use the internal CD-R/RW drive to backup and restore.
- Use the internal CD-R/RW drive to create an audio CD.
- Insert an audio CD in the internal CD-R/RW drive, patch its sound to a mixer channel, and record or play back the sound of the audio CD.
  * The audio of the internal CD-R/RW drive is connected as an analog signal.

For details on CD-R/RW drives recommended by Korg, please contact your Korg distributor.

Never use a CD-R/RW drive that is not sold by Korg or recommended by Korg.

When creating your own audio CD, please be aware of copyright laws. (→p.1)

Cautions for handling

- Make sure that the unit is level when operating.
- Do not use in extremely cold or hot locations.
- Do not use in locations of high humidity.
- Do not use this unit in locations of excessive dust or smoke.
- Do not apply strong physical shock to the unit. In particular, the unit is highly sensitive to physical shock during operation (either reading or writing), and must not be jarred.
- Normally, the drive uses software ejection. Although the CD tray can be opened by pressing the eject button, you can also make the tray open by inserting a pointed object (such as straightened paper clip) into the emergency eject hole.
- Do not store the unit in high temperature or high humidity.
- Never touch the focussing lens.
- Do not use commercially available lens cleaners.
- Do not transport the unit with a disc left in the drive.
- Do not leave the unit with the tray left open.

CD-R/RW disc handling

Please observe the following points when handling discs.
Failure to observe these points may cause problems such as data not being written correctly, loss of recorded data, or drive malfunction.

- Do not place discs in direct sunlight or in locations of high temperature or high humidity.
- Do not touch the surface of the disc. Hold the disc by its edges.
- Remove dust or dirt from the surface of the disc. Use an air duster or cleaner to remove dust.
- Do not affix labels to the disc, or write on the disc in locations other than specified.
- Do not use chemicals or detergent to wipe the disc.
- Do not bend or drop the disc.

Responsibility for loss of data

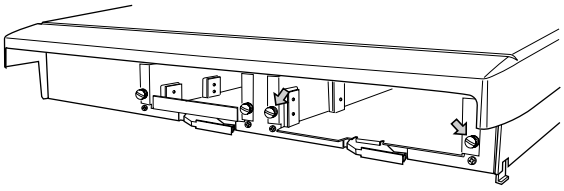
Korg Corporation will accept no responsibility for any damages (direct or indirect, whether sustained by the customer or by a third party) resulting from loss of or damage to data written on a CD-R or CD-RW disc.

Installing the internal CD-R/RW drive

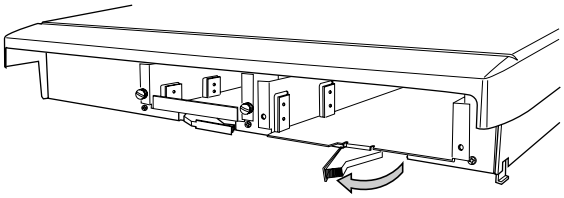
① **Turn off the power of the D1600, and disconnect all cables.**

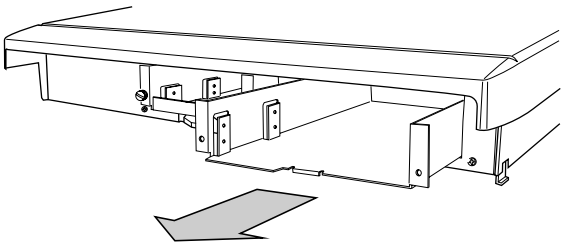
② **Remove the front cover.**
Remove the front cover as described in "Installing the internal hard disk."

③ **Remove the two screws that fasten the CD drive cartridge.**
Be careful not to lose these screws, since they will be used to fasten the CD drive cartridge in place.

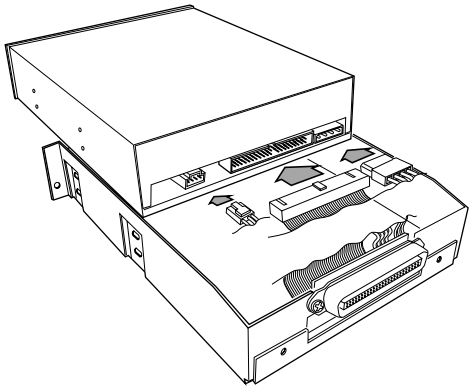


④ **Pull out the CD drive cartridge.**
Pull the lever located below the CD drive cartridge in the direction of the arrow, and pull out the cartridge.

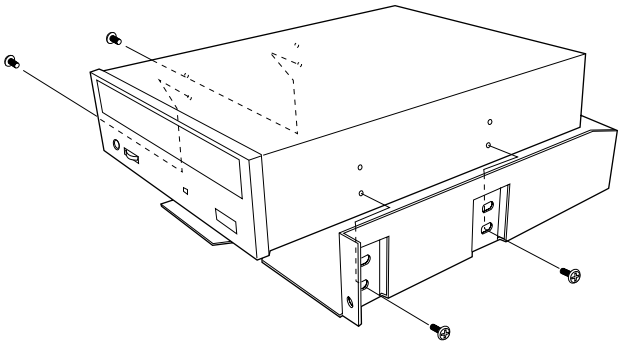




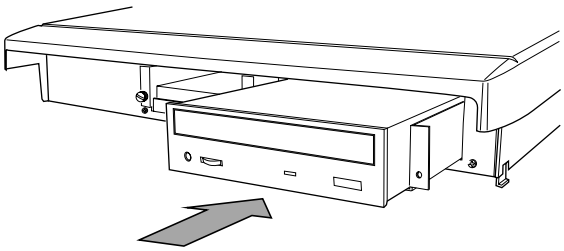
⑤ **Connect the cable to the CD drive.**
Connect the 40 pin flat cable, audio cable, and power supply cable (attached to the CD drive cartridge) to the hard disk.
Be careful that the connectors are oriented correctly, and that they are pushed in all the way.



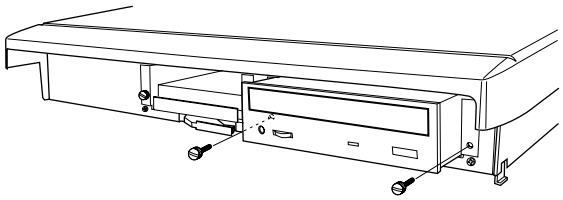
⑥ **Fasten the CD drive in the CD drive cartridge.**
Use the screws included with the CD drive to fasten it in place.



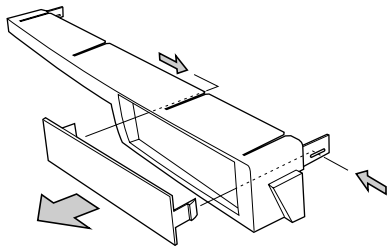
⑦ **Insert the CD drive cartridge into the D1600.**
Push it firmly in all the way.

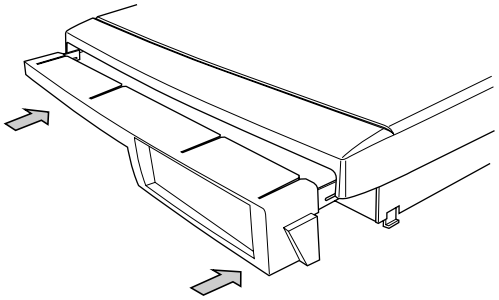


⑧ **Using the screws that you removed in step ③, fasten the CD drive cartridge to the D1600.**



⑨ **Close the front cover.**
If you have installed the CD drive, remove the drive bay cover before closing the front cover.





Checking the operation of the internal CD-R/RW drive

① **Turn on the power as described in the power-on procedure, and verify that the D1600 starts up correctly. (→p.18)**
Turn on the power of the D1600, and make sure that the start-up LCD screen shows that the internal CD-R/RW drive has been detected.

If the D1600 does not recognize the internal CD-R/RW drive, try reinstalling the internal CD-R/RW drive.

Inserting a disc

Make sure that the power of the D1600 is turned on.

① **Open the disc tray**
Press the eject button of the internal CD-R/RW drive, and the disc tray will open.

② **Insert the disc**
With the label of the disc facing upward, place it in the disc tray.

③ **Close the disc tray.**
Press the eject button of the internal CD-R/RW drive to close the disc tray.

If the D1600 does not recognize the disc, reinstall the internal CD-R/RW drive as described in "Installing the internal CD-R/RW drive."

Removing a disc

① **Press the eject button, and the disc tray will open.**

② **Gently remove the disc from the disc tray.**

③ **Manually press the disc tray in until it is completely closed.**

Emergency removal of the disc

Normally you can use the above procedure to remove and insert the disc. However if a problem (such as power failure) occurs and the disc cannot be removed, you can use the following method to remove the disc.

Please be aware that excessive use of this method may cause the **CDRW-2** to malfunction.

This procedure must be performed with the power off.

note To use this method, you will need a pin-like object of less than 2 mm diameter, such as a straightened paper clip. Insert this "pin" straight into the manual eject hole, and press. The disc tray will be forced open.

3. Using the internal CD-R/RW drive

The procedure for backup/restore using the internal CD-R/RW drive is the same as for backup/restore on an external drive. (→p.65)

For the procedure of using the internal CD-R/RW drive to create an audio CD, refer to "Step 9. Mixdown" (→p.49).

When using the internal CD-R/RW drive, you must be sure that the D1600 is placed on a level surface that does not vibrate.

Listening to an audio CD

Here's how to listen to an audio CD with the L channel of the CD assigned to mixer channel 1 and the R channel assigned to mixer channel 2.

① **Insert an audio CD into the internal CD-R/RW drive.**
Press the eject button of the internal CD-R/RW drive to open the tray, and insert the audio CD.

② **Assign the audio output of the internal CD-R/RW drive to mixer channels 1 and 2.**
Select the [INPUT] "Ch1–8" tab page. Select the "Ch1" icon, and rotate the [VALUE] dial to select "CD L." Select the "Ch2" icon, and rotate the [VALUE] dial to select "CD R."

③ **Play back the disc.**
Select the [SONG] "CDR/RW" tab page. Use the cursor to select the Play key of the CD-R/RW transport keys, and press the [ENTER] key. The sound of the internal CD-R/RW drive will be heard via the mixer channels.

Playing/recording the sound from an audio CD

Here's how to assign the L channel of a CD to mixer channel 1, the R channel to mixer channel 2, and record the sound.

* The audio of the internal CD-R/RW drive is connected as an analog signal.

① **Insert an audio CD into the internal CD-R/RW drive.**
As explained in the preceding section "Listening to an audio CD," assign the sound from the audio CD to the mixer channels.

② **Specify the recording tracks.**
Press the [TRACK STATUS] keys of tracks 1 and 2 to put them in REC mode (red LED).

③ **Verify the recording mode.**
Select the [RECORD] "RecMode" tab page. Set "SelectRecMode" to "**Input**."

④ **Enter record-ready mode.**
Press the [REC] key.

⑤ **Begin recording.**
Press the [PLAY] key.

⑥ **Stop recording.**
When you have finished recording, press the [STOP] key.

note When you finish recording, verify that the sound was recorded correctly.

The beginning of recording on the D1600 is not synchronized with the playback of the CD on the internal CD-R/RW drive. If you wish to start recording from the beginning of a CD song, use Trigger Recording. (→p.31)

Updating the system software

The system software of the D1600 can be updated from an external SCSI disk that contains D1600 system files.

For details on system file, please contact Korg distributor.

Connections

Connect the external removable disk drive containing the system file to the D1600 via SCSI. (→p.67)

Be sure to turn off the power of both devices before you make connections.

Updating the system

① **Select the drive connected to the D1600.**
In the [SYSTEM] "DiskUtil" tab page, use "Drive ID" to select the drive that contains the system file.

note It is also possible to update the system from the internal CD-R/RW drive.

② **Use "SelOperation" to select "LoadSystem."**

③ **Execute the load operation.**
Press the "Exec." button. When the display asks "AreYouSure?" press the "Yes" button to begin loading.

If the power is turned off accidentally while the system is being loaded, the D1600 may become incapable of operating correctly. If this occurs, please contact your Korg distributor.

④ **When loading is completed, the following display will appear, and the loaded system will be checked.**

```
----------Warning----------
Do Not Touch!
Do Not Disconnect Power!
Please wait restart.
---------------------------
Installing...
```

If the check sum result is correct, the display will indicate "Check sum=OK." If not, the display will indicate "Check sum=NG."
In the case of "OK," the D1600 will automatically restart after a while, and will begin operating with the new system.
In the case of "NG," restart the D1600, and attempt the loading procedure once again.
If the display still indicates "NG," please contact your Korg distributor.

D1600 specifications

Operating temperature range:	+5 – +35 degrees C (do not allow condensation)

■ Specifications

<Recorder section>

Number of tracks:	128 tracks (including virtual tracks) 16 tracks simultaneous playback, 8 tracks simultaneous recording @ 16 bits 8 tracks simultaneous playback, 4 tracks simultaneous recording @ 24 bits
Recording format:	24 bit/16 bit uncompressed, 44.1 kHz
Recording time:	16 bit recording: maximum 62 hours 24 bit recording: maximum 31 hours * When internal 20 Gbyte hard disk is used
Maximum storage capacity:	internal + external 1,000 Gbytes × 7 drives
Number of songs:	100 songs per drive
Locate points:	four points per song
Mark points:	100 points per song (marks can be named)
Metronome patterns:	96
Rhythms:	215
MMC functions:	Transmitted and received
Synchronization:	MTC transmission/reception, MIDI Clock transmission Tempo map (200 points per song) Sync track (1 track per song) Tempo rec
CD-R/RW functionality:	Create audio CD, backup/restore, import WAV file (ISO 9660)
SCSI functionality:	Recording/playback/copy song (playable), create audio CD, backup/restore, import (FAT 16, ISO 9660)/export (FAT 16) WAV file
Track editing:	Copy, insert, erase, delete, swap, reverse, time expansion/compression, fade, normalize, optimize (tracks can be copied between songs)
Song editing:	Copy, move, delete, rename, protect
Counter/locate format:	Min/Sec/mSec, Meas/Beat/Tick, Min/Sec/Frame (30NDF only)

< MIDI functionality >

MIDI functionality:	Mixer control, effect control, MMC transmission/reception, MTC transmission/reception, MIDI Clock transmission

<Mixer section>

Structure:	24 channel input, 8 BUS, 1 AUX, 1 MASTER
Signal processing:	32 bit 44.1 kHz
Equalizer:	HIGH (f:10 kHz G:±15 dB) MID (f:0.1 –20 kHz G:±15 dB) LOW (f:100 Hz G:±15 dB)
Scene memory:	100 scenes per song

<Effect section>

Structure:	insert × 8 (maximum) master × 2 (maximum) final × 1 All usable simultaneously
Signal processing:	44 bit 44.1 kHz
Programs:	insert (128 preset, 128 user) master (32 preset, 32 user) final (32 preset, 32 user)
Algorithms:	98
Effects:	106

<General>

Display:	240 × 64 pixel LCD with backlight and touch panel
Power consumption:	31 W (with HDD-20G installed) 38 W (with HDD-20G, CDRW-2 installed)
Dimensions:	510mm (W) × 363 mm (D) × 138 mm (H) (Including protrusions)
Weight:	6.0 kg (main unit only) 7.8 kg (with HDD-20G, CDRW-2 installed)

■ Principal specifications

Frequency response:	10 Hz –20 kHz ±1dB @+4 dBu, 10 kΩ load
S/N:	96 dB (typical) @IHF-A
Dynamic range:	96 dB (typical) @IHF-A
THD+N:	0.02 % (typical) 20 Hz –20 kHz @+16 dBu, 10 kΩ load
A/D conversion:	24 bit, 64 times oversampling
D/A conversion:	24 bit, 128 times oversampling
Sampling frequency:	44.1 kHz

■ Analog/digital input and output specifications

<INPUT1, 2, 3, 4>

Connectors:	XLR-3-31 type (+48V phantom power, SW), 1/4" TRS phone jack (balanced)
Input impedance:	4 kΩ/XLR-3-31, 10 kΩ/TRS phone jack
Nominal level:	–60 dBu @TRIM=max. +4 dBu @TRIM=min.
Maximum level:	–48 dBu @TRIM=max. +16 dBu @TRIM=min.
Source impedance:	600 Ω

<INPUT5, 6, 7, 8>

Connectors:	1/4" TRS phone jack (balanced)
Input impedance:	10 kΩ
Nominal level:	–60 dBu @TRIM=max. +4 dBu @TRIM=min.
Maximum level:	–48 dBu @TRIM=max. +16 dBu @TRIM=min.
Source impedance:	600 Ω

<GUITAR INPUT>

Connector:	1/4" phone jack (unbalanced)
Input impedance:	1 MΩ
Nominal level:	–60 dBu @TRIM=max. +4 dBu @TRIM=min.
Maximum level:	–48 dBu @TRIM=max. +16 dBu @TRIM=min.
Source impedance:	600 Ω

<MASTER OUTPUT L/R>

Connector:	1/4" phone jack (unbalanced)
Output impedance:	150 Ω
Nominal level:	–10 dBu
Maximum level:	+2 dBu
Load impedance:	10 kΩ or more

<MONITOR OUTPUT L/R>

Connector:	1/4" phone jack (unbalanced)
Output impedance:	150 Ω or more
Nominal level:	–10 dBu
Maximum level:	+2 dBu
Load impedance:	10 kΩ or more

<AUX OUTPUT>

Connector:	1/4" phone jack (unbalanced)
Output impedance:	150 Ω
Nominal level:	–10 dBu
Maximum level:	+2 dBu
Load impedance:	10 kΩ or more

<PHONES OUTPUT>

Connector:	1/4" stereo phone jack
Output impedance:	100 Ω
Maximum level:	50 mW @32 Ω

<S/P DIF INPUT/OUTPUT>

Connector:	optical
Format:	24 bit S/P DIF (IEC60958, EIAJ CP–1201)

<SCSI>

Connector:	HD SCSI-2 (D-sub half-pitch 50 pin)
Format:	SCSI-2 compatible

<MIDI IN/OUT>

Connectors:	DIN 5 pin × 2

<FOOT SW>

Connector:	1/4" phone jack (use separately sold PS-1)

<EXPRESSION PEDAL>

Connector:	1/4" stereo phone jack (use separately sold XVP-10 or EXP-2)

■ Accessories

:Power cable
:Owner's Manual
:Demo song backup CD

■ Options

:PS-1 pedal switch
:XVP-10 EXP/VOL pedal
:EXP-2 foot controller
:CDRW-2 CD-R/RW drive (internal type)
:HDD-20G 20GB hard disk drive (internal type)

- For other recommended drives, please contact your Korg distributor.

* Appearance and specifications of this product are subject to change without notice. (Nov./2000)

[Digital Recording Studio]

Model D1600

MIDI Implementation Chart

Date : 2000. 8. 4

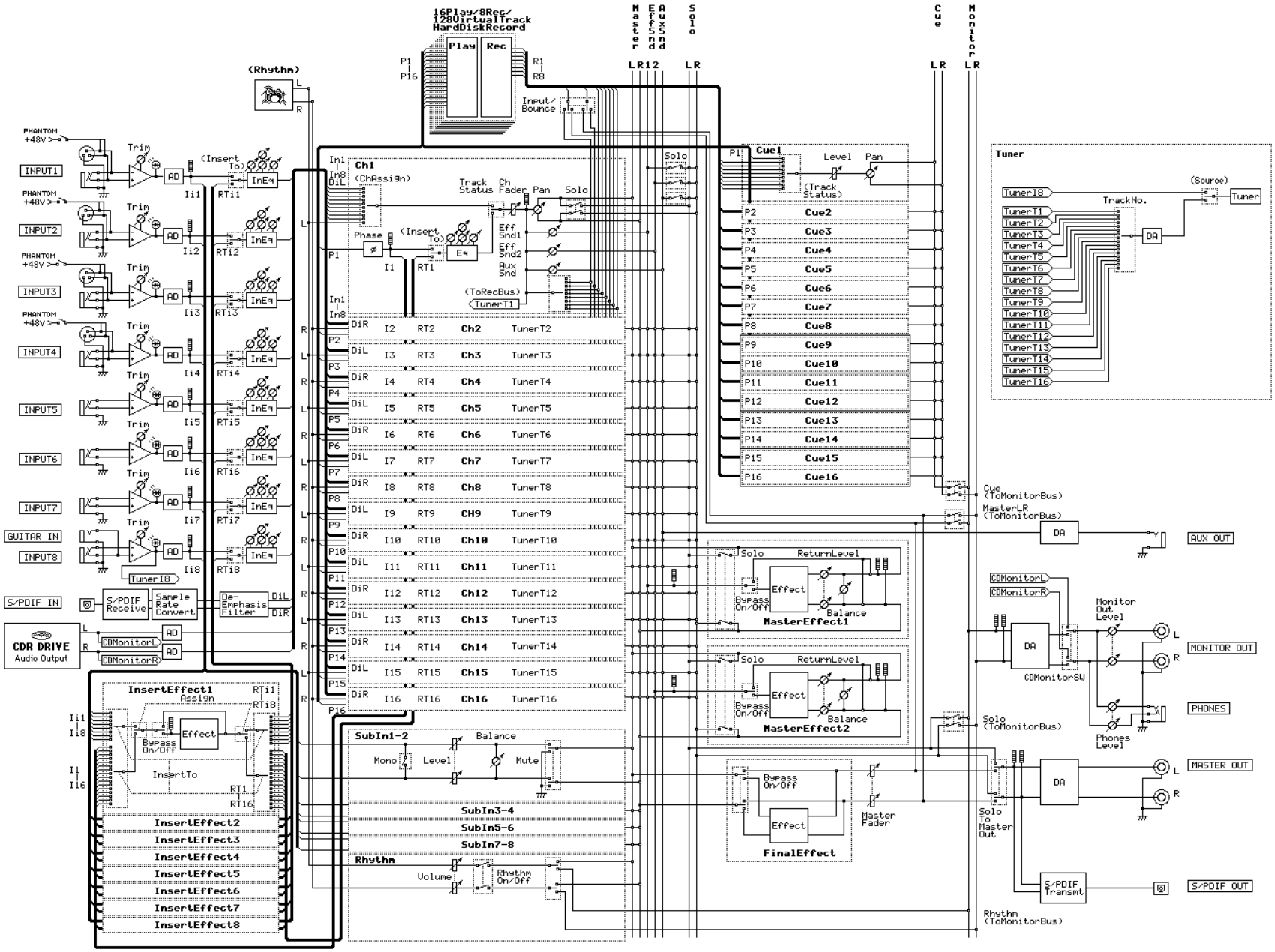
Function		Transmitted	Recognized	Remarks
Basic Channel	Default	×	×	
	Changed	×	×	
Mode	Memorized	×	×	
	Messages	×	×	
	Altered	**********		
Note Number:	True Voice	×	0 — 127 *5	
		**********		
Velocity	Note On	×	○ *5	
	Note Off	×	×	
Aftertouch	Polyphonic (Key)	×	×	
	Monophonic (Channel)	×	○ *5	
Pitch Bend		×	○ *5	
Control Change	0 —119	○ *6	○ *5,*6	Effect control (reception only) All control numbers #000-119 are received Mixer control (transmission/reception) 07 Fader 10 Pan 12,13 EffSend1/2 14 AuxSend 16,19,20,25 Eq Low/Mid/MidFc/Hi 68,71,72,77 InEq Low/Mid/MidFc/Hi 80,81,82,83 SubIn Lev/Bal/Mono/Mute 86,87 MstEff1 RetLev/RetBal 88,89 MstEff2 RetLev/RetBal 08,94 ChannelPair/Function 95 Master fader
Program Change:	Variable Range	○ 0 — 99 *7	○ 0 — 99 *7	Scene numbers 1–100
System Exclusive		○ *8	○ *1	
System Common	: Quarter frame	○ *2	○ *9	Received/transmitted only for 30 frame non-drop
	: Song Position	○ *3	×	
	: Song Select	×	×	
	: Tune	×	×	
System Real Time	: Clock	○ *3	○ *4	
	: Command	○	○	
Aux Messages	: Local On/Off	×	×	
	: All Notes Off	×	×	
	: Active Sense	×	×	
	: Reset	×	×	

Notes
*1: Received if “MMC Mode: Receive” is selected in [SYSTEM] “MMC.”
*2: Transmitted if “MTC Mstr” is selected in [SYSTEM] “Sync.”
*3: Transmitted if “Clock Mstr” is selected in [SYSTEM] “Sync.”
*4: Received if “MIDIClock” is selected for “SelectRecTempoTrackType” in [TEMPO/RHYTHM] “TmpTrk,” and tempo is being recorded.
*5: Received to control effects when selected in [SYSTEM] “Control.”
*6: Transmitted/received for mixer control when ControlChange is enabled in [SYSTEM] “MIDI.”
*7: Transmitted/received if ProgChange is enabled in [SYSTEM] “MIDI.”
*8: Transmitted if “MMC Mode: Transmit” is selected in [SYSTEM] “MMC.”
*9: Received if “MIDISync Mode: MTC Slave” is selected in [SYSTEM] “Sync.”

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○ : Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO × : No

Consult your local Korg distributor for more information on MIDI IMPLEMENTATION.


16Play/8Rec/
128VirtualTrack
HardDiskRecord
Play
Rec
Master
Effect
Aux Send
Solo
Cue
Monitor
LR12
LR
(Rhythm)
Input/
Bounce
PHANTOM
+48V
INPUT1
INPUT2
INPUT3
INPUT4
INPUT5
INPUT6
INPUT7
GUITAR IN
INPUT8
Trim
AD
(Insert
To)
InEq
Ch1
(ChAssign)
Track
Status
Ch
Fader
Pan
Solo
Phase
Eq
Eff
Snd1
Eff
Snd2
Aux
Snd
(ToRecBus)
TunerT1
Cue1
Level
(Track
Status)
Cue2
Cue3
Cue4
Cue5
Cue6
Cue7
Cue8
Cue9
Cue10
Cue11
Cue12
Cue13
Cue14
Cue15
Cue16
Tuner
TunerI8
TrackNo.
DA
(Source)
Tuner
TunerT1
TunerT2
TunerT3
TunerT4
TunerT5
TunerT6
TunerT7
TunerT8
TunerT9
TunerT10
TunerT11
TunerT12
TunerT13
TunerT14
TunerT15
TunerT16
Ch2
Ch3
Ch4
Ch5
Ch6
Ch7
CH9
Ch10
Ch11
Ch12
Ch13
Ch14
Ch15
Ch16
S/PDIF IN
S/PDIF
Receive
Sample
Rate
Convert
De-
Emphasis
Filter
CDR DRIVE
Audio Output
CDMonitorL
CDMonitorR
InsertEffect1
Assign
Effect
Bypass
On/Off
InsertTo
InsertEffect2
InsertEffect3
InsertEffect4
InsertEffect5
InsertEffect6
InsertEffect7
InsertEffect8
SubIn1-2
Mono
Level
Balance
Mute
SubIn3-4
SubIn5-6
SubIn7-8
Rhythm
Volume
Rhythm
On/Off
ReturnLevel
MasterEffect1
MasterEffect2
FinalEffect
Master
Fader
Cue
(ToMonitorBus)
MasterLR
(ToMonitorBus)
AUX OUT
Monitor
Out
Level
MONITOR OUT
CDMonitorSW
PHONES
Phones
Level
Solo
(ToMonitorBus)
Solo
To
Master
Out
MASTER OUT
S/PDIF
Transmt
S/PDIF OUT
Rhythm
(ToMonitorBus)

Effect Program List

INSERT EFFECT Preset128 User128

ProgNo	Categ	ProgramName	Algorithm	EFF1	EFF2	EFF3	EFF4	EFF5	Mode
	Reverb 7								2in2out x 2
I001	RV1	ReverbHall	Reverb Hall	HALL					
I002	RV2	SmoothHall	Smooth Hall	SmtHall					
I003	RV3	WetPlate	Reverb Wet Plate	WPlate					
I004	RV4	DryPlate	Reverb Dry Plate	DPlate					
I005	RV5	ReverbRoom	Reverb Room	ROOM					
I006	RV6	BrightRoom	Bright Room	BrRoom					
I007	RV7	ER	Early Reflection	ER					
	Delay 6								
I008	DL1	L/C/R Delay	L/C/R Delay	LCRDly					
I009	DL2	St/X.Delay	St/Cross Delay	StDly					
I010	DL3	St.MtapDelay	St.Multitap Delay	MtDly					
I011	DL4	St.ModDelay	St.Modulation Delay	ModDly					
I012	DL5	St.DynaDelay	St.Dynamic Delay	DyDly					
I013	DL6	AutoPanDelay	St.Auto Panning Delay	PanDly					
	Modulation 7								
I014	MO1	St.Chorus	St.Chorus	Chorus					
I015	MO2	St.Flanger	St.Flanger	Flangr					
I016	NO3	St.Phaser	St.Phaser	Phaser					
I017	MO4	St.Vibrato	St.Vibrato	Vibrat					
I018	MO5	St.Tremolo	St.Tremolo	StTrml					
I019	MO6	St.AutoPan	St.Auto Pan	AutPan					
I020	MO7	Ensemble	Ensemble	Ensmbl					
	Dynamics 7								
I021	DY1	St.Comp	St.Compressor	StComp					
I022	DY2	St.Limiter	St.Limiter	StLimit					
I023	DY3	MBandLimiter	Multiband Limiter	BnLimit					
I024	DY4	St.Gate	St.Gate	StGate					
I025	DY5	St.Exciter	St.Exciter/Enhancer	StExctr					
I026	DY6	St.Decimator	St.Decimator	Decim					
I027	DY7	St.P4EQ	St.Parametric 4band EQ	P4EQ					
	Special Effects 4								
I028	SE1	St.RingMod	St.Ring Modulator	RingMd					
I029	SE2	Doppler	Doppler	Dopplr					
I030	SE3	AnalogRecord	St.Analog Record	Record					
I031	SE4	TalkingMod	Talking Modulator	TalkMd					
	LargeSizeEffect7								
I032	LS1	St.G7EQ	St.Graphic 7band EQ	G7EQ					
I033	LS2	St.MBLimiter	St.Multiband Limiter	SBnLmt					
I034	LS3	Vocoder	Vocoder	Vocodr					
I035	LS4	StPitchShift	St.Pitch Shifter	StPitch					
I036	LS5	ER_Large	Early Reflections L	ER-L					
I037	LS6	RotarySpeakr	Rotary Speaker	RotSP					
I038	LS7	CntrCancellr	Center Canceller	Canclr					
	Guitar Multi 13			**EFF1**	**EFF2**	**EFF3**	**EFF4**	**EFF5**	
I039	GT1	GuitarMulti1	Guitar Multi1	Dist	NR	Cho/Fl	S.Dly		
I040	GT2	GuitarMulti2	Guitar Multi2	Wah	Dist	NR	Delay		
I041	GT3	GuitarMulti3	Guitar Multi3	Dist	NR	AmpSim	CabRes	Delay	
I042	GT4	GuitarMulti4	Guitar Multi4	Comp	P4EQ	AmpSim	Cho/Fl	S.Dly	
I043	GT5	GuitarMulti5	Guitar Multi5	Wah	Comp	P4EQ	Cho/Fl	S.Dly	
I044	GT6	GuitarMulti6	Guitar Multi6	Comp	P4EQ	Pitch	Delay		
I045	GT2	StackWah	Guitar Multi2	Wah	Dist	NR	Delay		
I046	GT4	Clean	Guitar Multi4	Comp	P4EQ	AmpSim	Cho/Fl	S.Dly	
I047	EB1	CleanChorus	Bass Multi 1	Comp	Exctr	P4EQ	Cho/Fl	S.Dly	
I048	GT4	SemiClean	Guitar Multi4	Dist	NR	Tone	AmpSim		
I049	GT5	HalfTone	Guitar Multi5	Wah	Comp	P4EQ	Cho/Fl	S.Dly	
I050	GT6	Detune	Guitar Multi6	Comp	P4EQ	Pitch	Delay		
I051	GT6	12string Sim	Guitar Multi6	Comp	P4EQ	Pitch	Delay		
	Amp Simulator 4								1in2out x 2
I052	AS1	Amp-Stack	Amp Simulator1	NR	AmpSim	CabRes	Cho/Fl	S.Dly	
I053	AS2	Vox-Tremolo	Amp Simulator2	NR	AmpSim	CabRes	Treml	Delay	
I054	AS3	Amp-Phaser	Amp Simulator3	NR	AmpSim	CabRes	Phaser	Delay	
I055	AS1	Amp-SS	Amp Simulator1	NR	AmpSim	CabRes	Cho/Fl	S.Dly	
	PreAmpSimulator 5								
I056	PA1	PreAmpSim	Pre Amp Simulator	Dist	NR	Tone	AmpSim		
I057	PA1	RockLead	Pre Amp Simulator	Dist	NR	Tone	AmpSim		
I058	PA1	Blues	Pre Amp Simulator	Dist	NR	Tone	AmpSim		
I059	PA1	SeattleLead	Pre Amp Simulator	Dist	NR	Tone	AmpSim		
I060	PA1	Crunch	Pre Amp Simulator	Dist	NR	Tone	AmpSim		
	Bass Multi 3								
I061	EB1	BassMulti1	Bass Multi1	Comp	Exctr	P4EQ	Cho/Fl	S.Dly	
I062	EB2	BassMulti2	Bass Multi2	Dist	NR	Filter	Delay		
I063	EB3	BassMulti3	Bass Multi3	Comp	P4EQ	Gate			

ProgNo	Categ	ProgramName	Algorithm	EFF1	EFF2	EFF3	EFF4	EFF5	Mode
	Mic Multi 1								
I064	MS1	MicMulti	Mic Multi	CabiRes	MicSim	Comp			
	Vocal Multi 4								
I065	VO1	Vocal Multi1	Vocal Multi1	Comp	Exctr	Pitch	S.Dly		
I066	VO2	Vocal Multi2	Vocal Multi2	NR	DeEss	P4EQ	Cho/Fl	S.Dly	
I067	EB1	RockVocal	Bass Multi1	Comp	Exctr	P4EQ	Cho/Fl	S.Dly	
I068	EB1	VocalDouble	Bass Multi1	Comp	Exctr	P4EQ	Cho/Fl	S.Dly	
	Mono-Mono 40			**EFF 1**	**EFF 2**				
I069	MM1	P4EQ-Exciter	P4EQ-Exciter	P4EQ	Excit1				1in1out x 4
I070	MM2	P4EQ-Wah	P4EQ-Wah	P4EQ	Wah				
I071	MM3	P4EQ-Cho/Fln	P4EQ-Cho/Flng	P4EQ	ChFl1				
I072	MM4	P4EQ-Phaser	P4EQ-Phaser	P4EQ	Phaser				
I073	MM5	P4EQ-MtDelay	P4EQ-Mt.Delay	P4EQ	Mt.Dly				
I074	MM6	Comp-Wah	Comp-Wah	Comp2	Wah				
I075	MM7	Comp-AmpSim	Comp-AmpSim	Comp2	AmpSim				
I076	MM8	Comp-OD/HiG	Comp-OD/HiG	Comp1	ODHiG				
I077	MM9	Comp-P4EQ	Comp-P4EQ	Comp1	P4EQ				
I078	MM10	Comp-Cho/Fl	Comp-Cho/Flng	Comp2	ChFl1				
I079	MM11	Comp-Phaser	Comp-Phaser	Comp2	Phaser				
I080	MM12	Comp-MtDly	Comp-Mt.Delay	Comp2	Mt.Dly				
I081	MM13	Exctr-Comp	Exciter-Comp	Excit2	Comp1				
I082	MM14	Exctr-Limtr	Exciter-Limiter	Excit2	Limitr				
I083	MM15	Exctr-Ch/Fl	Exciter-Cho/Flng	Excit2	ChFl1				
I084	MM16	Exctr-Phasr	Exciter-Phaser	Excit2	Phaser				
I085	MM17	Exctr-MtDly	Exciter-Mt.Delay	Excit2	Mt.Dly				
I086	MM18	Limitr-P4EQ	Limiter-P4EQ	Limitr	P4EQ				
I087	MM19	Limtr-Ch/Fl	Limiter-Cho/Flng	Limitr	ChFl2				
I088	MM20	Limtr-Phasr	Limiter-Phaser	Limitr	Phaser				
I089	MM21	Limtr-MtDly	Limiter-Mt.Delay	Limitr	Mt.Dly				
I090	MM22	OD/HG-Ch/Fl	OD/HiG-Cho/Flng	ODHiG	ChFl1				
I091	MM23	OD/HG-Phasr	OD/HiG-Phaser	ODHiG	Phaser				
I092	MM24	OD/HG-MtDly	OD/HiG-Mt.Delay	ODHiG	Mt.Dly				
I093	MM25	OD/HG-AmpSm	OD/HiG-AmpSim	ODHiG	AmpSim				
I094	MM26	Wah-AmpSim	Wah-AmpSim	Wah	AmpSim				
I095	MM27	Deci-AmpSim	Decimator-AmpSim	Decima	AmpSim				
I096	MM28	Decima-Comp	Decimator-Comp	Decima	Comp1				
I097	MM29	Ch/Fl-MtDly	Cho/Flng-Mt.Delay	ChFl2	Mt.Dly				
I098	MM30	Phasr-Ch/Fl	Phaser-Cho/Flng	Phaser	ChFl2				
I099	MM31	Amp-Tremolo	AmpSim-Tremolo	AmpSim	Treml				
I100	MM32	Reverb-Gate	Reverb-Gate	Reverb	Gate				
I101	MM33	MicSim-Lmtr	MicSim-Limiter	MicSim	Limitr				
I102	MM33	MicSim57/87	MicSim-Limiter	MicSim	Limitr				
I103	MM33	MicSim57/47	MicSim-Limiter	MicSim	Limitr				
I104	MM33	MicSm57/451	MicSim-Limiter	MicSim	Limitr				
I105	MM33	MicSm57/414	MicSim-Limiter	MicSim	Limitr				
I106	MM33	MicSim57/20	MicSim-Limiter	MicSim	Limitr				
I107	MM33	MicSm57/421	MicSim-Limiter	MicSim	Limitr				
I108	MM33	MicSim57/55	MicSim-Limiter	MicSim	Limitr				
	Mono-Mono 20			**EFF1**					
I109	MN1	OD/HiGain	OverDrive/HighGain	ODHiG					1in1out x 8
I110	MN2	Compressor	Compressor2	Comp2					
I111	MN3	Limiter	Limiter	Limitr					
I112	MN4	Gate	Gate	Gate					
I113	MN5	Exciter	Exciter2	Excit2					
I114	MN6	P4EQ	Parametric 4band EQ	P4EQ					
I115	MN7	AmpSim	AmpSimulator	AmpSim					
I116	MN8	Mt.Delay	Multitap Delay	Mt.Dly					
I117	MN9	Cho/Flng	Chorus/Flanger2	ChFl2					
I118	MN10	Phaser	Phaser	Phaser					
I119	MN11	Expander	Expander	Expndr					
I120	MN6	LoBoost	Parametric 4band EQ	P4EQ					
I121	MN6	LoCut	Parametric 4band EQ	P4EQ					
I122	MN6	MidBoost	Parametric 4band EQ	P4EQ					
I123	MN6	MidCut	Parametric 4band EQ	P4EQ					
I124	MN6	HiBoost	Parametric 4band EQ	P4EQ					
I125	MN6	HiCut	Parametric 4band EQ	P4EQ					
I126	MN2	PowerPop	Compressor2	Comp2					
I127	MN2	Dance	Compressor2	Comp2					
I128	MN2	Rock	Compressor2	Comp2					

MASTER EFFECT Preset32 User32

ProgNo	Categ	ProgramName	Algorithm	EFF 1
	Reverb 15			
M001	RV1	ReverbHall	Reverb Hall	HALL
M002	RV2	SmoothHall	Smooth Hall	SmtHall
M003	RV3	WetPlate	Reverb Wet Plate	WPlate
M004	RV4	DryPlate	Reverb Dry Plate	DPlate
M005	RV5	ReverbRoom	Reverb Room	ROOM
M006	RV6	BrightRoom	Bright Room	BrRoom
M007	RV7	ER	Early Reflections	ER
M008	RV3	DarkPlate	Reverb Wet Plate	WPlate
M009	RV4	BrightPlate	Reverb Dry Plate	DPlate
M010	RV1	ARENA	Reverb Hall	HALL
M011	RV2	Cathedral	Smooth Hall	SmtHall
M012	RV5	Club	Reverb Room	ROOM
M013	RV6	ListeningRoom	Bright Room	BrRoom
M014	RV7	NeoAcoustic	Early Reflections	ER
M015	RV6	Garage	Bright Room	BrRoom
	Delay 6			
M016	DL1	L/C/R Delay	L/C/R Delay	LCRDly
M017	DL2	St/XDelay	St/Cross Delay	StDly
M018	DL3	St.MtapDelay	St.Multitap Delay	MtDly
M019	DL4	St.ModDelay	St.Modulation Delay	ModDly
M020	DL5	St.DynaDelay	St.Dynamic Delay	DyDly
M021	DL6	AutoPanDelay	St.Auto Panning Delay	PanDly
	Modulation 7			
M022	MO1	St.Chorus	St.Chorus	Chorus
M023	MO2	St.Flanger	St.Flanger	Flangr
M024	NO3	St.Phaser	St.Phaser	Phaser
M025	MO4	St.Vibrato	St.Vibrato	Vibrat
M026	MO5	St.Tremolo	St.Tremolo	StTrml
M027	MO6	St.AutoPan	St.AutoPan	AutPan
M028	MO7	Ensemble	Ensemble	Ensmbl
	Special Effects 4			
M029	SE1	St.RingMod	St.Ring Modulator	RingMd
M030	SE2	Doppler	Doppler	Dopplr
M031	SE3	AnalogRecord	St.Analog Record	Record
M032	SE4	TalkingMod	Talking Modulator	TalkMd

FINAL EFFECT Preset32 User32

ProgNo	Categ	ProgramName	Algorithm	EFF 1
	Dynamics 10			
F001	DY1	St.Comp	St.Compressor	StComp
F002	DY1	StudioComp	St.Compressor	StComp
F003	DY1	TwoMix 60's	St.Compressor	StComp
F004	DY1	TwoMix 70's	St.Compressor	StComp
F005	DY2	St.Limiter	St.Limiter	StLimit
F006	DY2	ReMSTR POP	St.Limiter	StLimit
F007	DY2	ReMSTR DANCE	St.Limiter	StLimit
F008	DY2	StudioLimitr	St.Limiter	StLimit
F009	DY4	St.Gate	St.Gate	StGate
F010	DY7	St.P4EQ	St.Parametric 4band EQ	P4EQ
	LargeSizeEffect 10			
F011	LS1	St.G7EQ	St.Graphic 7band EQ	G7EQ
F012	LS2	St.MBLimiter	St.Multiband Limiter	SBnLmt
F013	LS2	ReMasterL.A	St.Multiband Limiter	SBnLmt
F014	LS2	GrooveBeat	St.Multiband Limiter	SBnLmt
F015	LS2	TwoMixHipHop	St.Multiband Limiter	SBnLmt
F016	LS2	TwoMixDance	St.Multiband Limiter	SBnLmt
F017	LS2	2MixGirlPop	St.Multiband Limiter	SBnLmt
F018	LS2	Digital Rock	St.Multiband Limiter	SBnLmt
F019	LS2	TwoMix 80's	St.Multiband Limiter	SBnLmt
F020	LS5	ER_Large	Early Reflections L	ER-L
	Reverb 6			
F021	RV1	ReverbHall	Reverb Hall	HALL
F022	RV2	SmoothHall	Smooth Hall	SmtHall
F023	RV3	WetPlate	Reverb Wet Plate	WPlate
F024	RV4	DryPlate	Reverb Dry Plate	DPlate
F025	RV5	ReverbRoom	Reverb Room	ROOM
F026	RV6	BrightRoom	Bright Room	BrRoom
	Delay 6			
F027	DL1	L/C/R Delay	L/C/R Delay	LCRDly
F028	DL2	St/X.Delay	St/Cross Delay	StDly
F029	DL3	St.MtapDelay	St.Multitap Delay	MtDly
F030	DL4	St.ModDelay	St.Modulation Delay	ModDly
F031	DL5	St.DynaDelay	St.Dynamic Delay	DyDly
F032	DL6	AutoPanDelay	St.Auto Panning Delay	PanDly

Rhythm Pattern List (215patterns)

For Beat settings other than 3/4, 4/4 or 6/8, only (Blank), Metro, or Hihat can be selected.
For Beat settings of 3/4, 4/4 or 6/8, the following rhythm patterns can be selected in addition to (Blank), Metro, or Hihat.
[I], [F], and [E] indicate Intro, Fill, and Ending pattern marks. In this list, Length and Tempo values are the number of measures in each rhythm, and the recommended tempo.

RhythmName	Length	Tempo
----3/4---- (13 pattern)		
3/4	4	150
[I]3/4	7	150
[F]3/4	1	150
[E]3/4	4	150
JazzWaltz1	8	150
JazzWaltz2	8	150
[I]JazzWaltz	4	150
[F]JazzWaltz	2	150
[E]JazzWaltz	5	150
Waltz	8	150
[I]Waltz	8	150
[F]Waltz	2	150
[E]Waltz	4	150
----6/8---- (14 pattern)		
6/8 Var1	4	120
6/8 Var2	2	120
6/8 Var3	4	120
6/8 Var4	8	120
6/8 Var5	8	120
[I]6/8 1	5	120
[I]6/8 2	5	120
[I]6/8 3	8	120
[F]6/8 1	2	120
[F]6/8 2	1	120
[F]6/8 3	2	120
[E]6/8 1	6	120
[E]6/8 2	5	120
[E]6/8 3	5	120
----4/4---- (188 pattern)		
8bt Rock1	1	120
8bt Rock2	8	120
8bt Rock3	8	120
8bt Rock4	8	120
8bt Rock5	4	120
8bt Rock6	4	120
[I]8bt Rock1	4	120
[I]8bt Rock2	8	120
[I]8bt Rock3	4	120
[F]8bt Rock1	1	120
[F]8bt Rock2	1	120
[F]8bt Rock3	1	120
[E]8bt Rock1	4	120
[E]8bt Rock2	7	120
[E]8bt Rock3	4	120
8beat 1	4	120
8beat 2	4	120
8beat 3	4	120
8beat 4	2	120
8beat 5	8	120
8beat 6	2	120
8beat 7	2	120
[I]8beat 1	5	120
[I]8beat 2	4	120
[F]8beat 1	1	120
[F]8beat 2	1	120
[F]8beat 3	1	120
[E]8beat 1	5	120
[E]8beat 2	3	120
[E]8beat 3	3	120
16bt Rock1	4	100
16bt Rock2	4	100
[I]16bt Rock1	5	100
[I]16bt Rock2	4	100
[F]16bt Rock1	1	100
[F]16bt Rock2	1	100
[E]16bt Rock1	6	100
[E]16bt Rock2	4	100
16beat 1	2	100
16beat 2	2	100
16beat 3	4	100
16beat 4	2	100
16beat 5	4	100
16beat 6	4	100
[I]16beat 1	4	100
[I]16beat 2	5	100
[I]16beat 3	4	100
[F]16beat 1	1	100
[F]16beat 2	1	100
[F]16beat 3	1	100
[E]16beat 1	3	100
[E]16beat 2	3	100
[E]16beat 3	5	100
Shuff 1	4	130
Shuff 2	4	130
Shuff 3	4	130
Shuff 4	8	130
Shuff 5	8	130
Shuff 6	8	130
[I]Shuff 1	5	130
[I]Shuff 2	4	130
[I]Shuff 3	8	130
[F]Shuff 1	2	130
[F]Shuff 2	2	130
[F]Shuff 3	1	130
[E]Shuff 1	3	130
[E]Shuff 2	5	130
[E]Shuff 3	4	130
HalfTime	8	150
[I]HalfTime	5	150
[F]HalfTime	1	150
[E]HalfTime	6	150
RockBld 1	8	90
RockBld 2	8	90
[I]RockBld 1	4	90
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[F]RockBld 1	1	90
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[E]RockBld 1	6	90
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Demo Song List

"Let The Sister Dance"
The song is written by Mumbo Jumbo Band
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